



NEW iPad

OUR HANDS-ON REVIEW p.46
THE ANDROID COMPETITION p.13

PCWorld

Windows

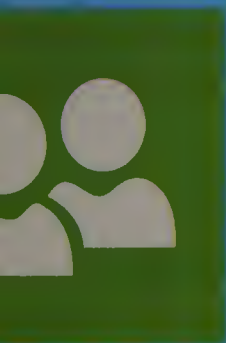
A RADICAL REDESIGN

Will You **Love** It
or **Hate** It? p.60



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Win 7?

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ANALYSIS
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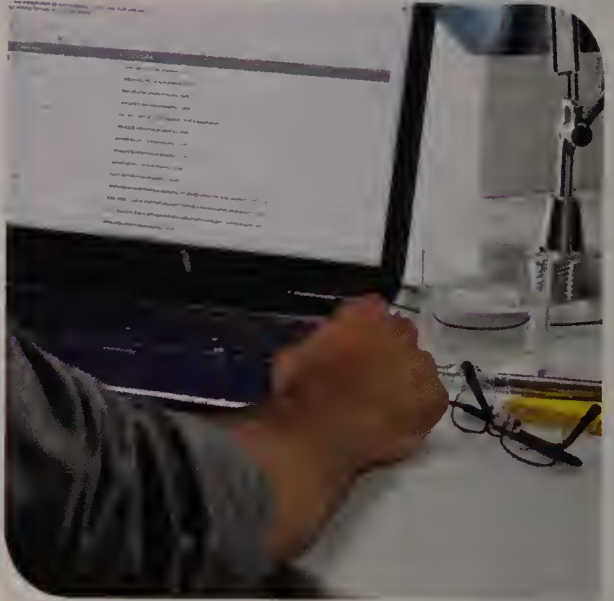
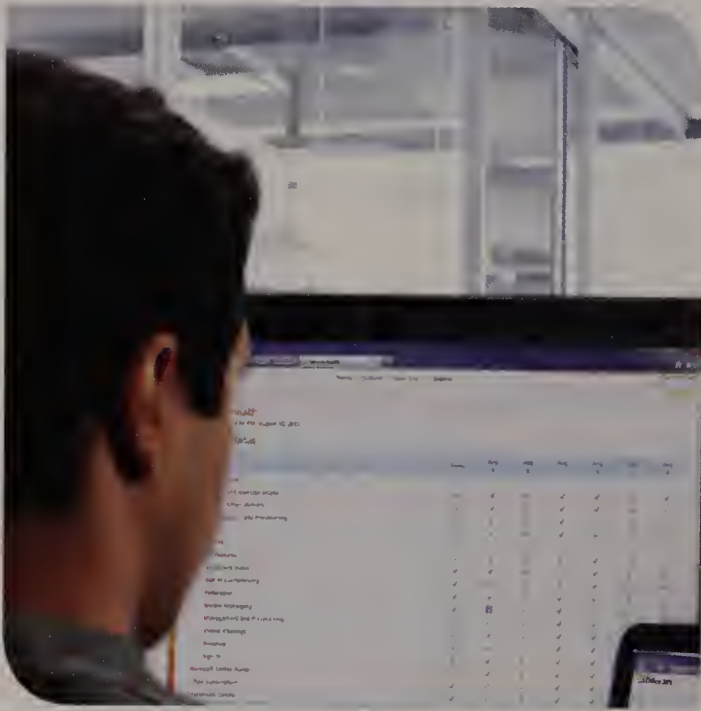
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BEFORE YOU BUY** p.68

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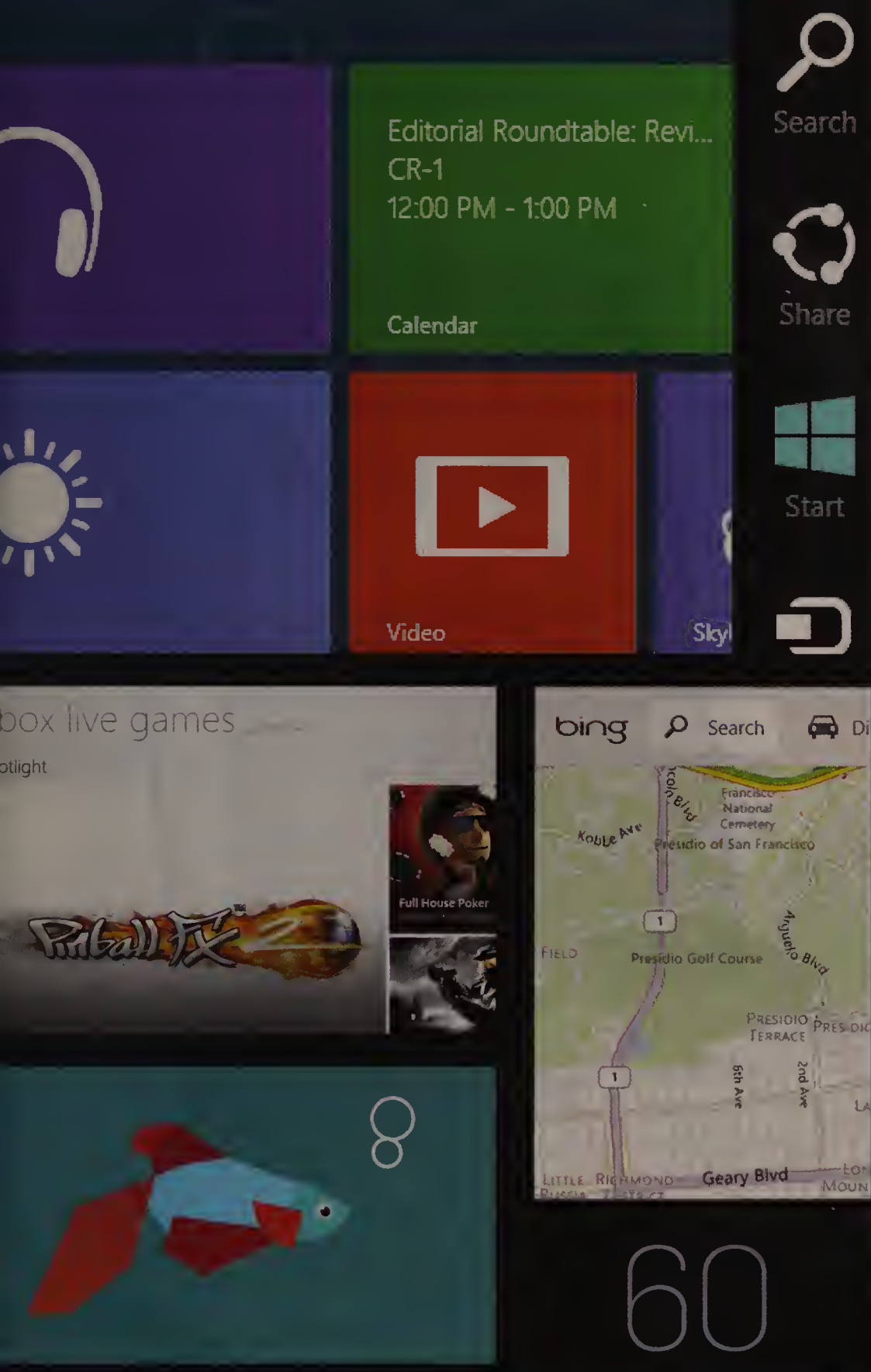
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Time

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Adjust for daylight saving time automatically

On

App switching

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On

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Touch keyboard

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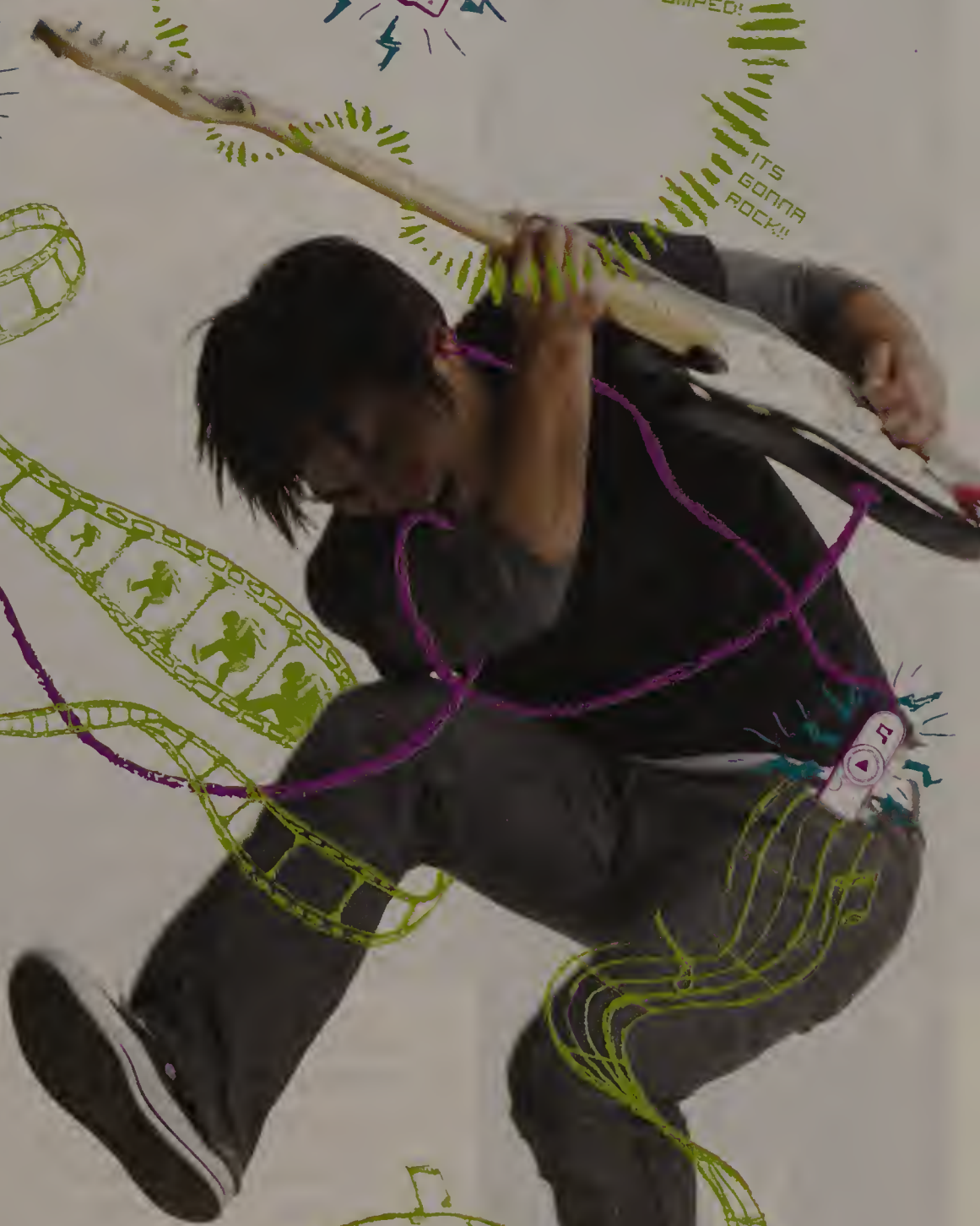
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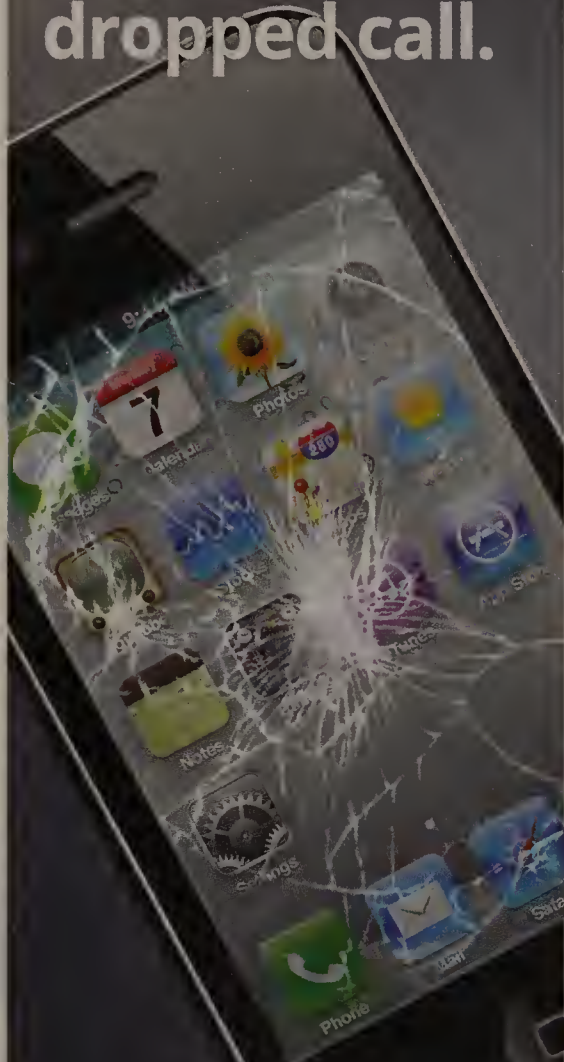


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Editor's Letter



STEVE FOX

Will Users Warm to Windows 8?

"WE'RE ALL ADULTS here. We've all upgraded our operating systems before." So began *PCWorld's* highly enthusiastic review of Windows 95—Microsoft's radical remaking of its crown jewel—in our August 1995 issue. The article continued: "Remember Windows 3.0 to 3.1? Or DOS 3.3 to DOS 5? Forget 'em. Upgrading to Windows 95... is A BIG DEAL." Elsewhere

in the magazine, Editor in Chief Philip Lemmons rendered our verdict on the new Windows user interface: "The staff consensus...is a standing ovation."

Ready for a ride on the déjà vu express? Microsoft certainly hopes you are. Because with the likely release later this year of Windows 8—the most ambitious overhaul of the operating system since Windows 95—the company hopes to reinvigorate its user base just as it did back in 1995, while positioning Windows for the brave new world of touchscreens and tablets.

Good luck with that. According to Senior Editor Jason Cross, Assistant Editor Nate Ralph, and Editor Edward N. Albro, who collaborated on our cover story, "Windows 8: Will You Love It or Hate It?" (page 60), the new operating system—available now as a "Consumer Preview" beta—is a bold aesthetic achievement that dazzles on a touchscreen. But it runs the risk of confusing, or even angering, mouse and keyboard users, who may find themselves staring at a screen offering few navigational

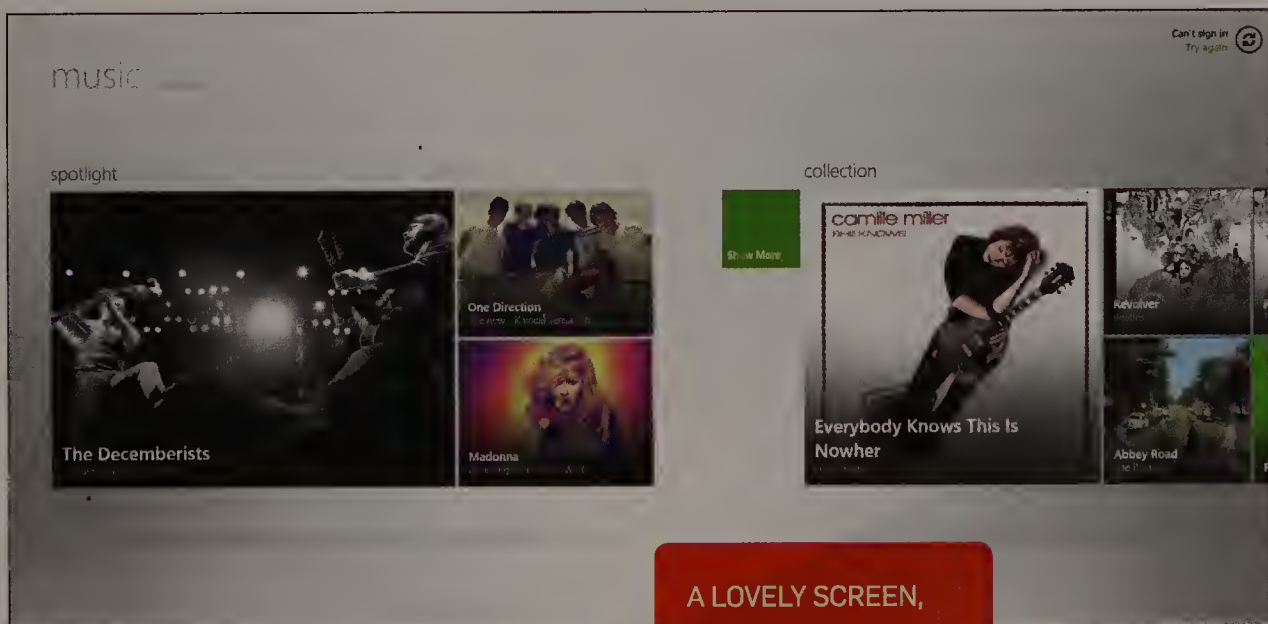
The beta of Microsoft's next operating system is getting a tryout on millions of machines. So far, reviews are mixed.

cues, not even the familiar Start button.

True, the switch from Windows 3.1 to Windows 95 was just as jarring, introducing a series of new computing metaphors, the Start button, 32-bit-program support, and other changes. The big dif-

Indeed, criticism of Windows 8 has grown so heated that a former Microsoft employee started a website entitled Fixing Windows 8, suggesting ways to improve the OS's navigation.

Will Microsoft heed the hubbub and



A LOVELY SCREEN, courtesy of Windows 8. But what are you supposed to do now?

ference between then and now, though, is that no one was all that satisfied with Windows 3.1 (remember eight-character file names?). Today, by comparison, Windows 7 is a stable operating system that people value—especially after the debacle that was Windows Vista.

That a potential user revolt could be in the offing surfaced when we surveyed nearly 3000 early adopters who had installed the Consumer Preview. The Metro interface turned out to be a flash point. "Plenty of people liked it," notes Albro, "but we were surprised by the many highly negative responses that dominated the conversation."

go back to the drawing board, even if doing so could muck up

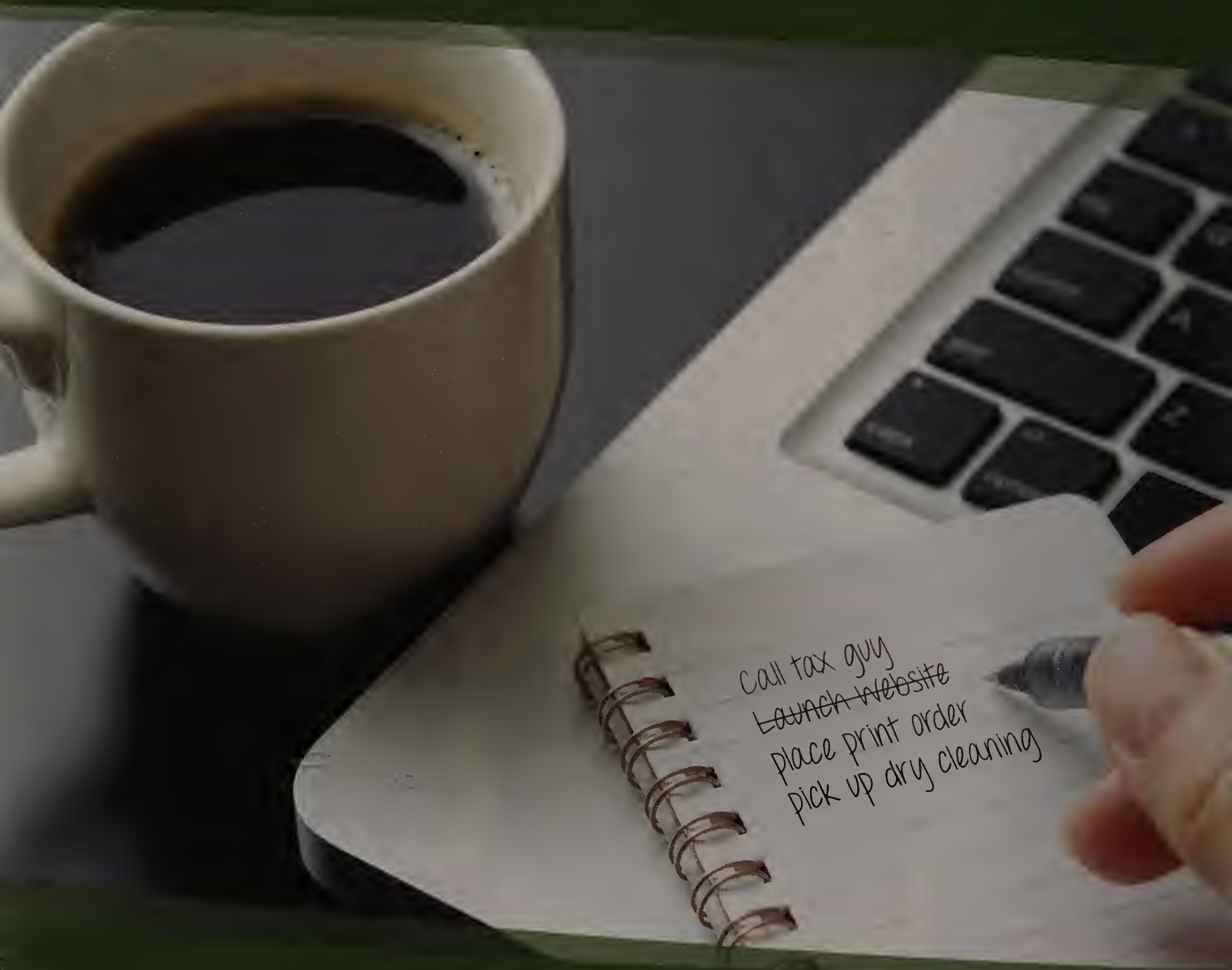
Windows 8's pristine austerity? Or will the Redmond crew trust in innovation and hope users will follow? Stay tuned. This drama hasn't played out yet.

Oh, and about that August 1995 review of Windows 95: The author was a *PCWorld* executive editor named Steve Fox. Back then, I was certain that Microsoft had a huge hit on its hands.

I'm predicting a major hit this time as well. In 2015. With Windows 9. ●

Steve Fox is editorial director of *PCWorld*.

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In response to an article that ran in the March issue suggesting that all-in-ones were supplanting traditional tower PCs (see find.pcworld.com/72779), readers stoutly defended desktops, arguing that only these models could be all-purpose, full-fledged gaming machines and home media centers.



Desktop PCs Remain Alive!

I was shocked to read Nate Ralph's over-the-top assertion that the tower desktop is finished ["The Desktop PC—Dead or Alive?" *Forward*, March]. I disagree entirely. Power users—we're in the thousands—will continue to demand the capacity and performance of a tower.

Worse, he goes on to say that most users just need a machine to host their photos, stream their movies, and play an occasional video game. *What?* Why no mention of the really important applications of any PC, desktop or otherwise: email, Web browsing, social media, online shopping, and other Internet-based uses? All-in-ones? I wouldn't have one if you gave it away.

*Bill Benjamin
Biltmore Lake, North Carolina*

I find it humorous that people are being told to avoid desktop computers. As an experienced IT tech with a \$2000 budget to replace an aging laptop, I spent two weeks searching for the best value

and the best performance for a high-level gaming home media center. This led me to now owning the best piece of electronic awesomeness I have ever seen—and you'd better believe it is a Windows 7 desktop PC. If you want to call desktop towers dead, fine. Doing so will only lower their prices for people like me.

*Jonathon Fryman
Mouree, Ohio*

The original desktop is far from dead. The all-in-ones are nice; but if one thing goes, the whole PC is shut down for at least a week. On my old desktop I can replace any part in under an hour. Some of these newfangled all-in-ones require special tools to get into, not to mention custom parts.

Also, no one mentions the life span: With the monitor in the same box as the CPU, forget gaming or any intensive

computing, as that will no doubt shorten the life span of the system.

Steven Mogue, Port Richey, Florida

Editor's note: For complete reviews of seven recent all-in-one PCs, see page 79.

Shortened Warranty? Buyer Beware

In "Hard-Drive Makers Slash Their Warranty Periods" [*Forward*, March], you state: Seagate "is redirecting money previously spent on upholding longer warranties into product development." That can only mean that Seagate is spending a considerable amount on replacement or repair of older drives. Maybe if drive makers built more-reliable products in the first place, they wouldn't have so many warranty claims.

Jim Borowski, Kolispell, Montana

As a 35-year quality assurance professional, I consider that *any* downgrading

of warranty policies in any manner is highly likely an indication that the manufacturer has concerns about the product quality or about its own capability to continue making a reliable and high-quality product. My advice: Buyer beware!

*Michael J. Spodoni
Rail Road Flot, California*

I am not a fervent gamer, and I think I represent more than just a few of us in the aging population who love our desktop PCs, thank you very much!

*Tom Burns
Orleans, Ontario*

Security Suites

Your evaluations of security suites ["PC Bodyguards: Best Security Suites," March] did not note an important limitation. Although you tested for "successful cleanup," at least some of the >>

products you tested will not clean up anything until they are activated. When I tried to use a Kaspersky trial version to remove viruses from an infected PC, it identified them, but refused to remove them until it was activated. The viruses were blocking access to the Internet, though, so Kaspersky wouldn't activate.

Have security suites reached the point where they all work? No. Viruses just have to block the Internet.

Jon Jacobik, Quincy, Massachusetts

I'm wondering why, in your review of the top 10 security suites, you did not include McAfee, one of the oldest and best-known Internet security firms.

Daryl Allen, Dallas

Editor's response: We tested McAfee Internet Security 2012, but it did not do


well enough to crack our top 10. See our full review at find.pcworld.com/72739.

Curses!

The March *Back Page* item "A Touchy Interface" implied that the expression "curses-based" found in a software description was a typo. In reality, curses is a terminal control library for Unix/Linux systems. The assumed funny

mistake actually represents the intended humor of Unix/Linux programmers.

James Kaiser, Notre Dame, Indiana

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CORRECTIONS

A SENTENCE IN "The Best Printers for \$150, \$300, \$500, \$750" (March) referred to spreading out high ink costs over time with a cheap printer's slow output. The author's intention, however, was to focus on low printing volume, not slow output speed: Pricey inks may be tolerable for people who print little.

In March's "Software That Does It All," we should have said that the classes and forums available through the You Need a Budget program's website are free.

PCWorld regrets the errors.

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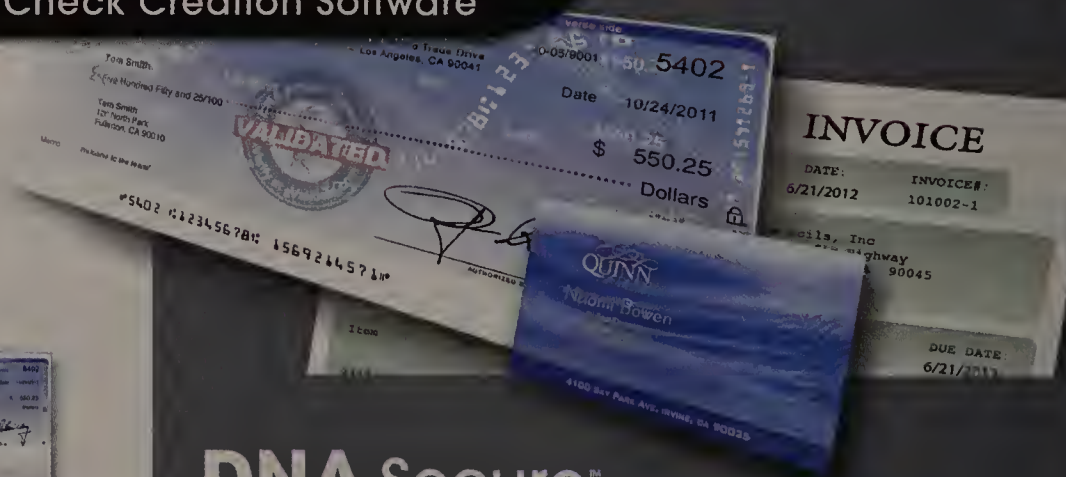
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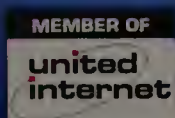
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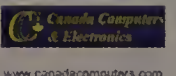
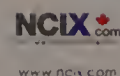
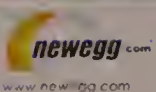
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Forward



Android Tablets: Is It Game Over?

We spent some time putting the third-generation iPad to the test. Here's our take on how Apple's latest slate matches up with the three best Android tablets.

BY MELISSA J. PERENSON

THE NEW APPLE iPad is here (see our review on page 46), and we tested it next to the iPad 2 and top 10.1-inch Android tablets. The results? The new iPad streaks to the head of the pack, largely on the strength of its improved display. But that doesn't mean Apple's rivals should abandon the race—they simply have to work harder to overcome the iPad's lead.

Here I highlight a few findings; for our full analysis, see find.pcworld.com/72802.

Graphics Powerhouse

In the GLBenchmark 2.1.2 synthetic tests we performed, the new iPad, with its A5X CPU containing two Cortex-A9 processors and a quad-core graphics engine (PowerVR SGX 543MP4), blasted past Android competitors.

On two of the GLBenchmark tests, the new iPad virtually tied the iPad 2. But on two others, including the Pro Offscreen test (see the chart to the right), it was the clear winner, leaving all rivals in the dust. The Android tablets we chose represent a cross-section of hardware and operating system versions,

so it's difficult to isolate why they failed to keep up. The Toshiba Excite 10 LE uses Texas Instruments' OMAP 4430, and the Samsung Galaxy Tab 10.1 4G LTE carries Nvidia's Tegra 2; we tested both with Android 3.x Honeycomb. The Asus Eee Pad Transformer Prime has

Nvidia's Tegra 3 and Android 4.0 Ice Cream Sandwich.

When I tried three games available for Tegra 3 slates and the iPad—but not made specifically for the new iPad's Retina display—the scale tipped in Nvidia's favor. On Asus's Transformer Prime, games had better detail >>

New iPad Outpaces Rivals

TABLET	GLBenchmark 2.1.2 score (fps)
Apple iPad (third-generation)	176
Apple iPad 2	147
Asus Eee Pad Transformer Prime	81
Toshiba Excite 10 LE	50
Samsung Galaxy Tab 10.1 4G LTE	43

■ CHART NOTES: Score on Pro Offscreen subtest. fps = frames per second; higher is better.

and more-realistic graphics than on the iPad. I expect the Tegra 3's lead to be short-lived, though. Once developers update their iPad games' graphics, the high-res visual

treat of gaming on the iPad will level the playing field.

We also looked at the tablets' Web surfing prowess. As you can see in the chart below, the Android models

had a slight edge on our page load tests. Even though the new iPad is a well-rounded package, Apple still has areas where it can improve.

The Future of Tablets

It's easy to think, given the praise that critics are lavishing on the iPad, that the game is over—that non-Apple contenders should just pack up and go home. Think again.

Competitors must redouble their efforts to challenge the leader. Google has to address ecosystem fragmentation and the complexities of developing for Android on various devices. Hardware

makers must not only release tablets, but replicate the "it just works" appeal of the iPad.

Meanwhile, Microsoft has an opportunity to swoop in. Or does it? Already, the fact that Windows 8 tablets with ARM processors won't support current Windows software may invite consumer confusion. Nevertheless, the clean look of Windows 8 (see page 60) could be a big win.

No one knows how successfully Apple's rivals will respond to the challenge that the new iPad poses. But it's going to be fun to watch them come to grips with this powerhouse tablet.

Web Surfing: Android Leads

TABLET	Web page load time
Asus Eee Pad Transformer Prime	2.6
Samsung Galaxy Tab 10.1 4G LTE	2.6
Toshiba Excite 10 LE	2.9
Apple iPad (third-generation)	3.2
Apple iPad 2	3.3

CHART NOTE: In seconds; lower is better.

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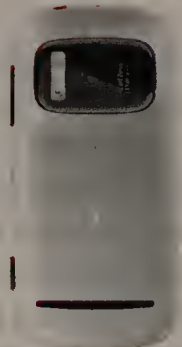
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TECH SPOTLIGHT: NEXT-GENERATION PHONES



HUAWEI ASCEND D QUAD AND D QUAD XL Huawei, a newcomer to the high-end smartphone market, will release two Android phones in the second quarter. Both have 1280-by-720-pixel touchscreens and use Huawei's own K3V2 quad-core processor.



NOKIA 808 PUREVIEW Thanks to the 41-megapixel (no, that's not a typo) camera sensor in this Symbian-based phone, you'll be able to capture an image, zoom in on it, reframe it, and crop it without noise or pixelation. The 808 is due in the second quarter.



SAMSUNG GALAXY BEAM An Android phone planned for release in the second quarter, the Beam measures just 0.49 inch thick, but packs a 15-lumen projector. That's impressive, since most pico projector accessories are only 10 or 12 lumens bright.

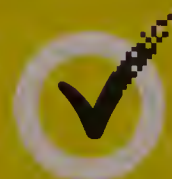


HTC ONE X At the Mobile World Congress show, the One X was among four phones with Nvidia's Tegra 3 quad-core processor. But the U.S. version of the One X will have a Qualcomm S4 chip instead, as the Tegra 3 is incompatible with current LTE radios.

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Data Plans: How Does 'Throttling' Affect You?

IT'S PRETTY EASY to use up your wireless data allowance for a given month—and if you do that, your carrier will knock your speed down into 2G territory. I saw it firsthand when I tested T-Mobile's approach to "throttling."

For this test I maxed out my 2GB plan by downloading two movies. Nowhere in its terms of service does the carrier mention 2G speeds; the text messages T-Mobile sent me as I passed my limit, however, explicitly said that data transfers would slow to 2G speed levels.

Would the carrier gradually reduce my data transfer rate, or would it immediately throttle the rate down all the way? The second hypothesis turned out to be the true one.

The chart below lists my speeds before and after I maxed out my data plan. At about 2:51 p.m. on February 23, I got a text from T-Mobile stating that I had passed the limit; shortly thereafter, my download speed dropped from almost 8 megabits per

second to 0.07 mbps. A YouTube video that had taken 1 minute, 3 seconds to load and play through now took 4 minutes, 35 seconds. Entering the Android Market and downloading an app from it took so long that I gave up.

A False Scarcity?

Carriers say that restricting data use preserves network capacity in the face of skyrocketing demand and a dearth of available wireless spectrum. There may be some truth to that story, but carriers' abandonment of unlimited plans might have more to do with profit. Research firm Validas reviewed the phone bills of 11,000 users and found that the data usage of "bandwidth hogs" on both restricted (throttled or tiered) and unlimited plans was effectively the same. Judging from those results, usage restrictions don't seem to serve the carriers' stated goal of preserving capacity.

—Mark Sullivan

DATE AND TIME	Downloads (mbps) ¹	Uploads (mbps) ¹	Latency (ms) ²	Mode	Bars ³
February 23, 2:05 p.m.	7.9	1.8	59	4G	Three
After exceeding data cap					
February 23, 4:48 p.m.	0.07	0.08	125	2G, 4G	Three
February 24, 4:56 p.m.	0.07	0.10	78	4G	Three
February 27, 4:47 p.m.	0.07	0.10	87	2G, 4G	Four

FOOTNOTES: ¹mbps = megabits per second. ²ms = milliseconds. ³Four bars maximum.

BRIEFS

Ebook Prices: DOJ Warns Apple, Publishers

The U.S. Department of Justice has warned Apple and five book publishers that it is planning to file lawsuits against them for allegedly colluding to fix the prices of ebooks, according to a *Wall Street Journal* report, quoting anonymous sources. A DOJ spokesperson declined to comment on the report, but said that the ebook investigation is still open. Critics accuse Apple and the five publishers of setting prices in response to Amazon's attempt to introduce a \$9.99 rate for most ebooks.



Watches and Pedometers Reward You for Workouts

How much would you work out for \$10? Switch2Health's wristwatch and pedometer use motion detectors to track how much wearers

exercise, and provide codes for prizes such as \$10 iTunes, Macy's, and Target gift cards. Consumers can buy the wristwatch and pedometer online; the company also markets the devices to businesses for corporate health efforts.

Firefox Add-On Shows Who's Tracking You

Collusion (collusion.toolness.org), an experimental Firefox add-on, graphs the tracking cookies your browser acquires. It can differentiate between behavioral tracking (such as cookies that record the links you click) and other cookies. Originally an independent project run by Mozilla engineer Atul Varma, Collusion is now a Mozilla development.



'Google Play' Is the New Android Market

Good-bye, Android Market: Google Play is now the place to go to grab Android apps, music, books, and movies. This is a change in branding and appearance only; listings look nearly the same, but have a new domain name and logo. With Google Play, Google is pushing the idea of having one place for all your content, on Android devices or in any desktop browser. It's clearly an answer to Apple's iCloud.

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¹TBR 3Q11 x86-Based Servers: Corporate IT Buying Behavior & Customer Satisfaction Study, November 2011.

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Monochrome E-Readers on the Decline

PLACE AMAZON'S KINDLE Touch and Kindle Fire side by side. Which one looks more compelling? Consumers, given the choice between conventional e-readers and splashier color tablets, are picking the latter in a big way.

Global e-reader shipments will reach 2 million units in the first quarter of 2012, down from 9 million in the last quarter of 2011, according to Digitimes Research.

Inexpensive color tablets, such as the Kindle Fire and the Barnes & Noble Nook Tablet, seem to be luring buyers away from electronic models, a phenomenon that Digitimes Research calls a "substitution effect."

The big-picture view isn't dire, though. Global e-reader shipments climbed to 22.82 million units in 2011—up 107 percent from the previous year. And annual e-reader shipments should exceed 60 million units by 2015, Digitimes Research estimates.

—Jeff Bertolucci

GEEKTECH

Geek 101: What Is Jailbreaking?

MANY DEVICES HAVE digital rights management software, either to limit the software you can run or to bolster security. Through jailbreaking, or

hacking a device to bypass DRM restrictions, you can run "unauthorized" software and tweak the operating system. iPhone hackers coined *jailbreaking* in reference to breaking the iPhone out of Apple's iTunes "jail." Since then people have (somewhat erroneously) used the term for similar hacks on other platforms such as Android, where it is also known as "rooting."

Generally, jailbreaking tools come as Mac OS X or Windows desktop applications. At this writing, the sole tool for jailbreaking the iPhone 4S and iPad 2 with iOS 5.0.1 is Absinthe (find.pcworld.com/72799). Other tools can jailbreak only older devices running iOS 5.0.1. The iPhone Dev-Team released the very first jailbreaking tool, and the group is still central to the iOS hacker community; go to its blog at blog.iphone-dev.org to see what's new in tools. An alternative app store called Cydia (cydia.saurik.com) is arguably the definitive repository of tweaks and apps; most jailbreaking tools install it automatically.

What Are the Risks?

Root access permits modding, but it can also open the door for malicious attacks. Although few documented cases have arisen, one hacker created a harmless worm known as iKee to emphasize the vulnerability of improperly secured jailbroken devices. Additionally, some users notice general instability, increased data usage, or lower battery life.

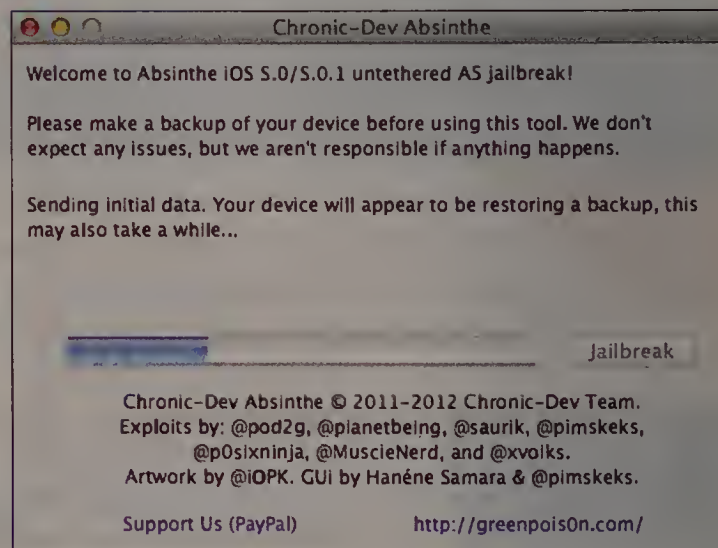
What about the legality of the practice? It depends on who you

ask, but as far as the U.S. government is concerned, jailbreaking your smartphone is legal. In 2010, a federal ruling accepted the arguments of the Electronic Frontier Foundation, and added phone jailbreaking to a list of exemptions to the Digital Millennium Copyright Act's anticircumvention provisions. This DMCA exemption is up for review again this year, and the EFF and other groups such as the Software Freedom Law Center hope to get the exemption expanded to cover the hacking of other devices, such as tablets and game consoles.

Hackers and modders insist that jailbreaking is a right, and some do it as a statement. They liken it to souping up a car: Imagine owning a car with the hood welded shut so that you can't modify it. Apple and some other companies, in contrast, continue to plead with regulators to outlaw the practice. The best they can do now is to tell users that jailbreaking defies their terms of use and voids a device's warranty. While you don't risk being arrested for jailbreaking, you can't expect help from the Apple Store genius when your hacked iPhone has a problem.

—Mike Keller ●

You can hack your iDevice to free it from Apple's restrictions. Learn about the process, and its pros and cons.



CURRENTLY THE ONLY tool that can jailbreak newer A5 processor-based iOS 5.0.1 devices is Absinthe.



Visit the GeekTech blog at go.pcworld.com/geektech for hacks, tips, and hardware news.

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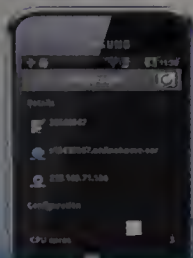
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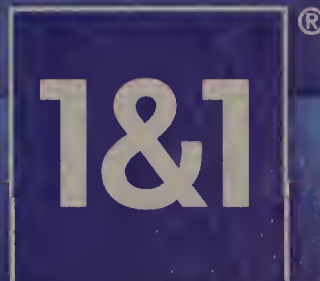
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Staff Picks

NEW PRODUCTS THAT HAVE OUR EDITORS DROOLING



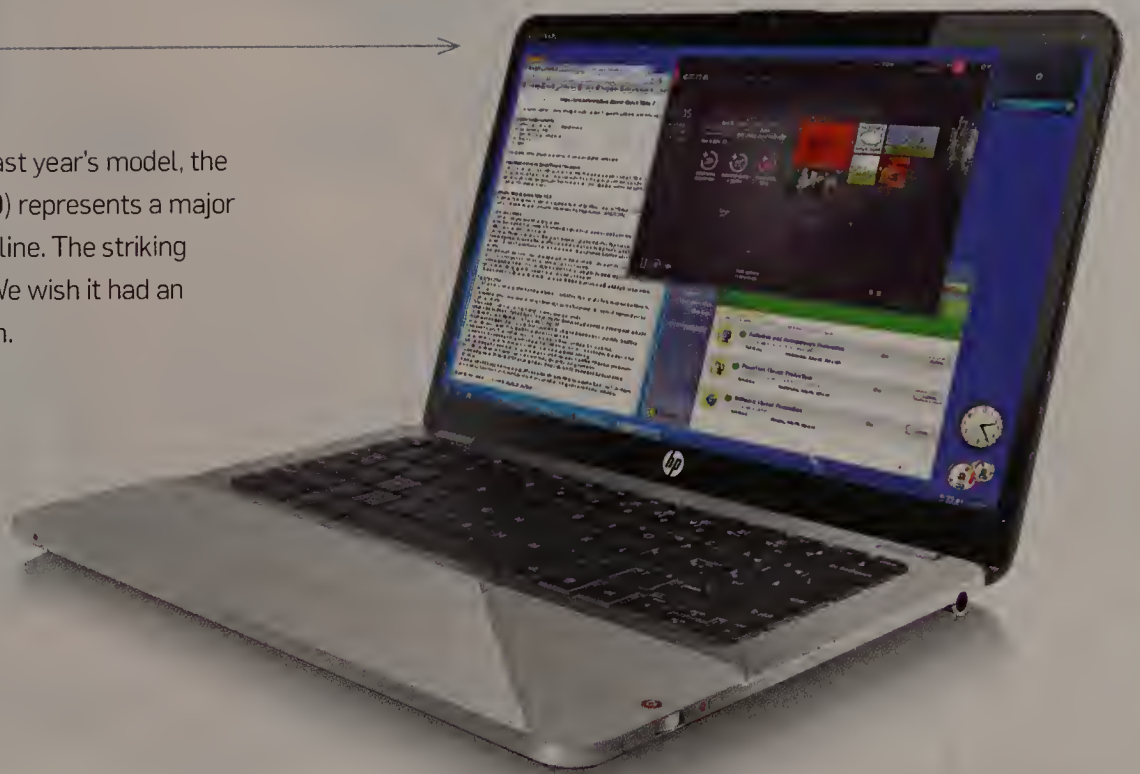
Canon Pixma MX892

The Canon Pixma MX892 (\$200) connects to the world in multiple ways—not just through a USB cable. This inkjet multifunction printer can print items from the cloud, including pictures from a Picasa account. The MFP also supports Apple's AirPrint, and it can communicate with iOS and Android devices.

find.pcworld.com/72795

HP Envy 14 Spectre

Smaller, thinner, and lighter than last year's model, the Envy 14 Spectre (starting at \$1400) represents a major comeback for HP's premier laptop line. The striking design incorporates lots of glass. We wish it had an option for discrete graphics, though.
find.pcworld.com/72796



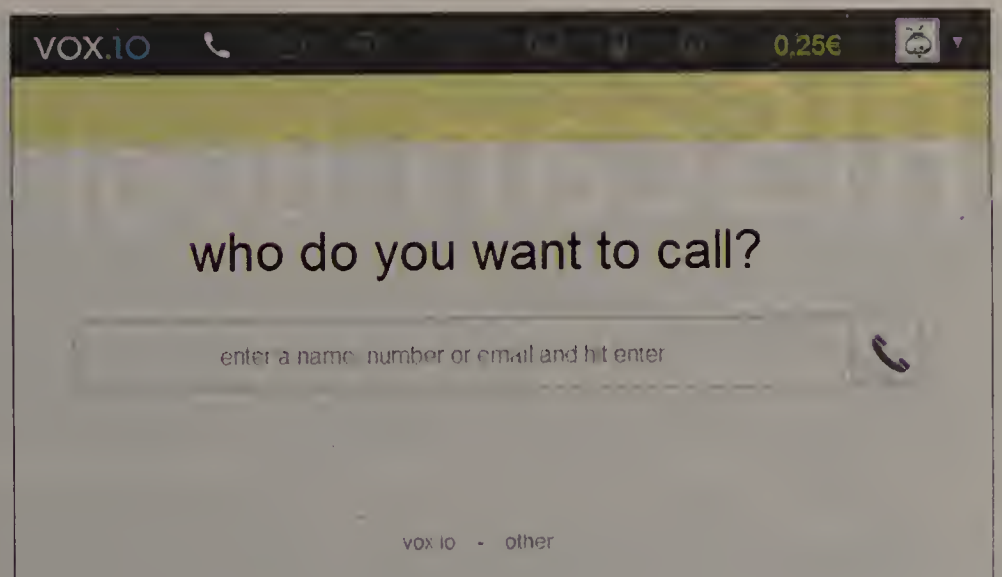
Toshiba Excite 10 LE

Apple's new iPad might want to avoid standing next to the Toshiba Excite 10 LE (starting at \$530). At just 1.18 pounds and 0.3 inch thick, it's the supermodel of 10.1-inch tablets, yet it still manages to provide three useful ports.
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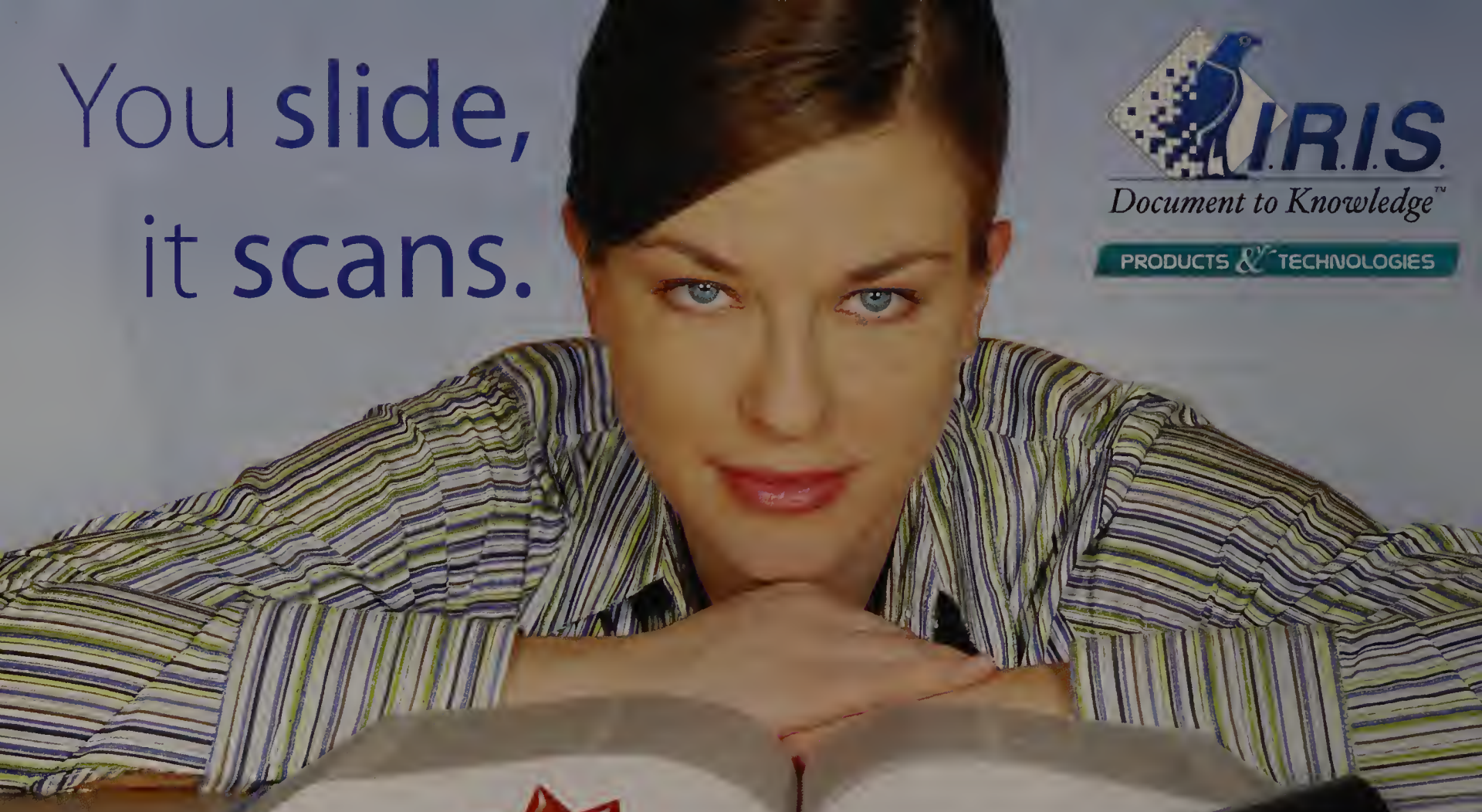


Vox.io

VoIP services can be cheap, but they're seldom easy to use. Vox.io, a Web service and iOS app, is different. You can initiate a call—even to someone who doesn't use Vox.io—in a few clicks. And if, say, Mark is a user, you can search for "call Mark" on Google and get a link to call him.
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Consumer Watch

A Digital Consumer Bill of Rights

Consumers need a legal framework that imposes security responsibilities on cloud-storage companies as well as others that host sensitive data.

BY MARK SULLIVAN

MANY OF US store large amounts of information—financial figures, health data, documents, social networking stuff—at sites around the Web. But we have few assurances that our data won't be misused, lost, or stolen. We digital consumers need a data-security bill of rights that has the force of law behind it. Following are some key items that this bill of rights might cover; for additional topics, see the complete discussion at find.pcworld.com/72738.

We have the right to know: Any Internet company should be required to inform users if it intends to collect, store, and aggregate their data to support its advertising efforts on or off its network, or for the benefit of third-party marketers that might seek to license, buy, or trade for the data. We should get details about how data will be used, by whom, and for how long; and then we should have the chance to opt in or opt out. This choice should not be buried in a privacy policy, but rather spelled out to us clearly before we can begin using the site. This opt-in/opt-out provision should be required by law; it should not take the form of a nonbinding industry guideline.

The data we store in the cloud is our valuable property: The companies that host our personal data on their servers reap some financial reward from doing so. The usual model is to collect and aggregate as much user data as possible, anonymize it, and sell it to Web marketing or advertising firms.

However, because our information has genuine value, we consumers have property owners' rights when we lend our data to an Internet company. If the data is lost, stolen, or



misused, we should be compensated for the harm caused.

That harm isn't limited to the loss of the data itself. A consumer's reputation could be hurt if some bad actor stole their data and then either published it or blackmailed the person by threatening to publish it. Storing our business data, such as trade secrets, on cloud servers opens an extra set of risks.

And as the MegaUpload case illustrates, if a company breaks the law, and authorities seize the site, users could lose their files, even if those files are perfectly legal. Law enforcement officials should hold that data only as long as it's needed for evidence; then they should return that property to the users.

We have the right to expect reasonable protection of our data. Any Internet company that stores our data for business purposes must have in place a reasonable level of security to protect our property. The company should confirm that it complies with the data-security laws that most states (45 at last count) have passed, and that it adheres to the Federal Trade Commission's data-security guidelines. And it should constantly upgrade its security to deal with new hacking techniques.

If government agents want to monitor our digital transmissions, they should get a search warrant first. Currently law enforcement needs to obtain only a "D order"—named after subsection (d) of section 2703 of the Stored Communications Act—from a court to force an ISP to hand over the email >>

and IP addresses that a user communicates with, and the URLs of the Web pages the user visits. Agencies can also use the D order to acquire information about a user's location over time from a wireless company, which keeps records of the cell towers that the user's phone contacts while the person is within range.

In general, to gain access to consumers' Internet-use or GPS-location data, law enforcement should have to obtain a full-fledged search warrant from a judge after showing probable cause that the data searched will yield material evidence of a crime.

While rules concerning law enforcement data access can lead to more-effective tools to monitor and convict bad actors, they can also reduce the privacy rights and expectations of the vast majority of people who are not and never will be guilty of any criminal activity. The United States has a long history of strictly limiting the scope of such police powers, and it should continue doing so in the digital age.

What Needs to Be Done?

Companies worldwide now routinely report instances of data loss or theft. The Privacy Clearinghouse says at least 500 million sensitive records have been breached since 2005, with more than 22.4 million records lost or exposed in 2011. Yet so far Congress has resisted passing legislation that would impose rules on organizations seeking to store sensitive information. Without such protection for consumers, the responsibilities of Internet companies remain ambiguous, and individuals who have been harmed by data loss are on shaky legal ground in pursuing compensation.

It's time to set up a legal framework at the federal level that treats user data as valuable property, and holds Internet companies liable for the harm resulting from data loss, theft, or misuse. But this will happen only when consumers demand it from lawmakers.

SKEPTICAL SHOPPER

On Facebook, Think Before You 'Like'



ANNE KANDRA

Sponsored Stories can make you an unpaid spokesperson for any product or service you 'Like' or just post about.

ANYONE WHO HAS survived middle school knows that publicly admitting you "like" someone can have serious repercussions. On Facebook, you might want to consult your inner tween before clicking a 'Like' button. That's because Facebook, not unlike that nosy girl in seventh grade, wants to tell everyone about

your objects of affection, via ads that make you an unwitting and unpaid endorser.

These ads, called Sponsored Stories, repurpose users' updates and activities to hawk an advertiser's products or services. Once you 'Like' a company page, check in at a merchant location, post an update mentioning a product, service, or company, or otherwise interact with a Facebook advertiser, your activity becomes potential ad fodder. Your friends could then receive an update about it—whether you want Facebook to share it or not.

In a video on Facebook's site, a product manager notes that the Stories go only to your friends, and they aren't getting anything you haven't already sent them. True, but isn't there a difference between your recommending a movie to your friends, and Facebook taking it upon itself to do so?

Plus, the Stories don't always take context into account.

Consider the case of blogger Nick Bergus, who made a funny post about an Amazon ad for a 55-gallon drum of

"personal lubricant." Next thing he knew, he was in ads hawking the lube to his friends. One pal told Bergus he saw the ad every time he logged in to Facebook. (You can read Bergus's full story at find.pcworld.com/72733.)

If Sponsored Stories were to stay in the ticker feed, where they are relatively easy to ignore or hide, they might not be such a big deal. Unfortunately, as of this writing, Facebook has started releasing them into users' news feeds.

You can't stop Facebook from using you as an unpaid endorser or tainting your news feed with ad pitches, but you can minimize the noise by being judicious about your activities. Before you click a 'Like' button, check in at a shop or restaurant, post an update about a product or service, or install an app that tracks or shares your actions, ask yourself if you feel strongly enough about the product or service to endorse it to your friends. You might still end up being an involuntary shill, but at least you can be selective about it. After all, a little "like" can go a long way.

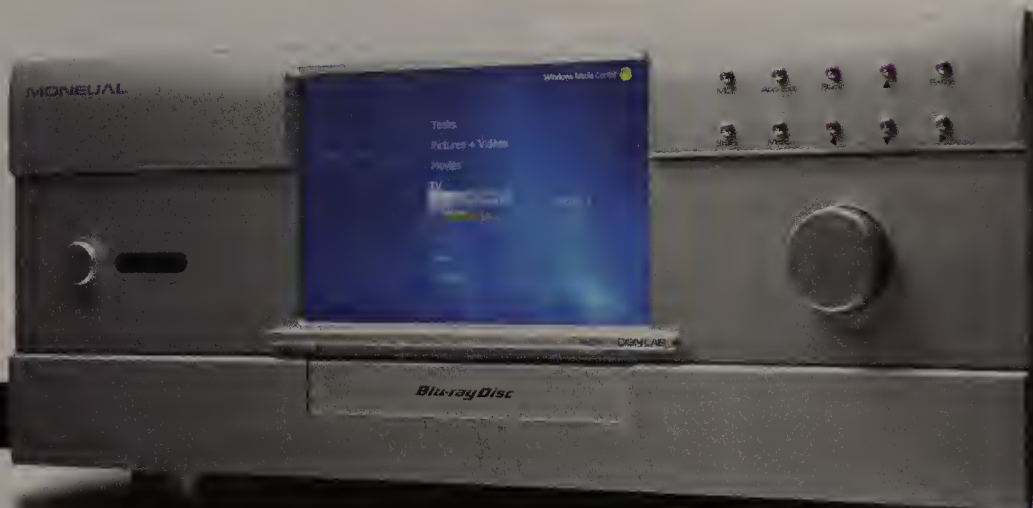


FACEBOOK USERS CANNOT opt out of becoming the stars of Sponsored Stories advertisements.

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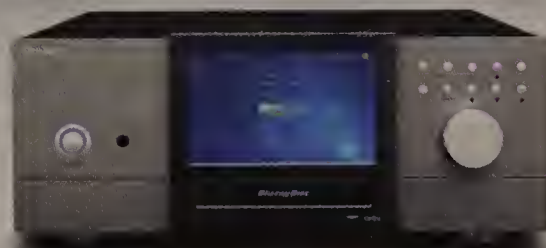
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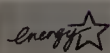
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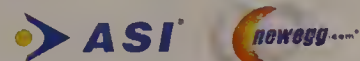


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ON YOUR SIDE

I BOUGHT H&R Block tax software along with a few other software products that Office Depot advertised with rebates when purchased at the same time as the tax program. Movie Plus was one of the products I chose, and Serif, the publisher, has not honored the \$40 rebate. Serif representatives say I have to provide them with the UPC of the tax software as proof of purchase, but that is not listed as a requirement in the rebate instructions; the instructions say that proof of purchase should be a dated store receipt or online invoice. I have sent all of the materials as required by the instructions. All the other rebates for software I bought that day have been honored. Can you help me get that last \$40 rebate?

—James Whitlow, Indialantic, Florida



MICHELLE MASTIN

OYS responds: Whitlow had scanned and dated all of the materials he sent in for the rebate, so we forwarded that information to Serif to see if the company could clarify the terms of the rebate and point out any errors or missing information.

A Serif representative reviewed the materials and agreed that Whitlow had correctly submitted all of the required information. Serif apologized to Whitlow for the error and the poor service. The representative said that initially the rebate system was

set up incorrectly, which resulted in a small number of customers not receiving their rebates, but that the error has been fixed and will not happen again. The representative also confirmed that Whitlow will get his rebate soon.

Whenever you mail in a request for a rebate, it's a good idea to scan and date everything first, as Whitlow did. That way, you'll have a copy of the associated materials for your records in case anything goes wrong with the request.

Konica Minolta Printer Recall

Konica Minolta has recalled several desktop color laser printer models. The printers can short-circuit and overheat during use, posing a fire hazard. The recalled models are the Magicolor 3730DN, Magicolor 4750DN, Bizhub C35, and Bizhub C35P. Model numbers are located on the plate attached to the side of the printer, as well as on the bottom of the printer's front door.

If you own a 3730DN or 4750DN, stop using it immediately and contact Konica Minolta to schedule a free replacement. If you have a C35 or C35P, the company will send an authorized service agent to repair and replace the faulty part.

For additional information, contact Konica Minolta toll-free at 800/825-5664 and press the 5 key, or visit the company's website (www.kmbs.konicaminolta.us).

✉ Have you run into a problem involving customer service, a warranty, a rebate, or the like for your tech gear? Email us at onyourside@pcworld.com.



Apple App Store Hits 25 Billion Downloads

USERS HAVE DOWNLOADED 25 billion apps from the Apple App Store. That's a mind-boggling number, especially when you consider that the world's population is now about 7 billion.

You have to wonder when app usage will overtake Web browsing, considering that smartphone usage is at an all-time high. According to a Pew Internet report, as of February 2012, 46 percent of American adults owned a smartphone, versus 35 percent in May 2011. Pew also found that among adults who own a mobile phone, more are smartphone users than non-smartphone users.

One factor that's contributing to ever-increasing app usage is how well and how quickly many apps work compared with sites accessed in a Web browser. Look at eBay's mobile app, for instance: If you're at a store, and you find an interesting item, you can open the app and in one click scan the item's bar code. If the item is for sale on eBay, you get instant access to the auctions selling it. Amazon's app operates the same way, and many other apps make shopping, connecting, or gaming superslick.

According to AppleInsider, Apple has paid app developers more than \$4 billion, and offers about 600,000 apps in its store. Recent figures extrapolated by Aysmco suggest that Apple had sold an estimated 410 million mobile devices as of the end of 2011. If you divide 25 billion by 410 million, you get a result of about 61 apps per device.

The 25 billion downloads mark ends a promotion that Apple had been touting in which the user to hit the milestone by downloading an app would win a \$10,000 App Store gift card. No word yet on who the lucky winner is, as of this writing.

—Christina DesMarais ●



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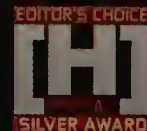
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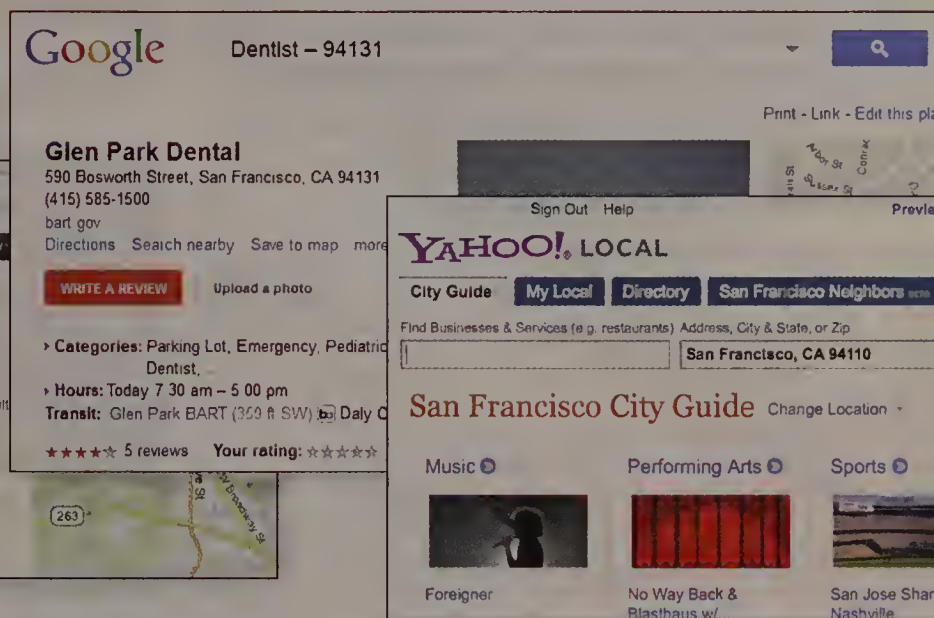
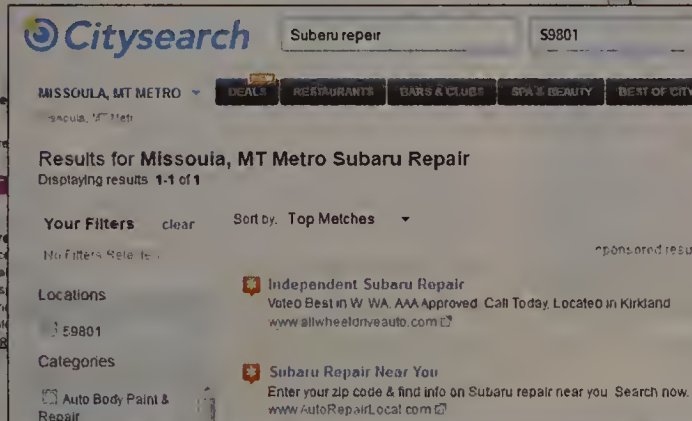
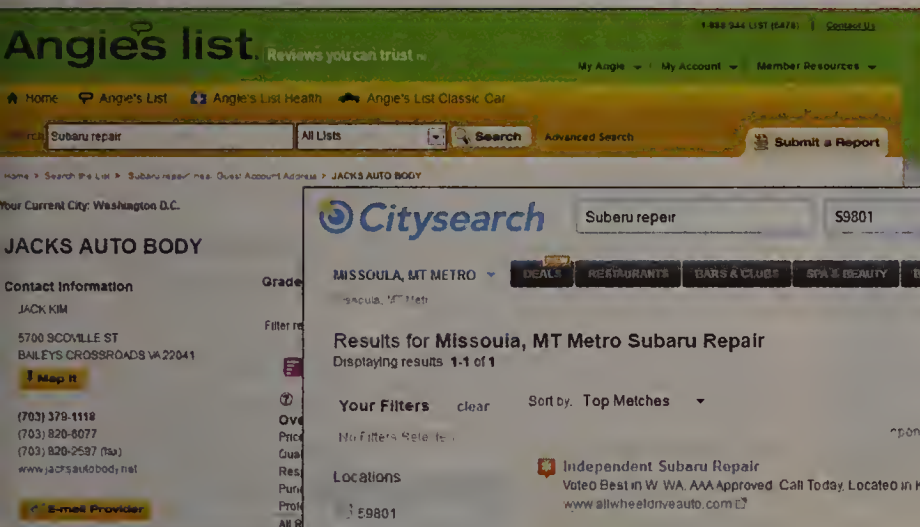


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Business Center



Four Alternatives to Yelp

Yelp isn't the only site that can make or break your company's reputation. Learn how other sites can help you reach out to customers.

BY CHRISTOPHER NULL

IF YOU WANT to find a restaurant, a plumber, or even a lawyer, Yelp probably has you covered. But as a business owner, you realize what a double-edged sword its user reviews are.

Today, assorted competitors also give consumers a soapbox on service providers. It's hard to tell at a glance, though, how popular or comprehensive a user-review site is, or whether its posts are actually licensed from another site.

We analyzed the biggest, most popular websites that let users review service-based businesses. This is a summary of

our findings; for the complete roundup, which includes additional sites reviewed, browse to find.pcworld.com/72778.

Angie's List

Angie's List doesn't cover restaurants—the bread and butter of most user-review sites—and it isn't free for users. Instead, consumers pay a membership fee for access. Businesses do not (and cannot) pay a fee to be listed.

Businesses with good ratings (at least a B) can advertise, but only if they offer Angie's List members a discount. The company says that anonymous reviews are not allowed, which minimizes spam. And companies registered with the site can respond to reviews, free of charge.

Especially if you operate any kind of home-repair business, it makes sense to keep tabs on your listing here. >>

SITE FEATURES	Angie's list	Citysearch	Google places	YAHOO! LOCAL	yelp
Advertising options?	Yes, if your business has high ratings	Yes	No, only through AdWords	No	Yes
Business fees	Free; high-rated companies can advertise	Free to join; upgrades available (pricing not released)	Free	Free to join; upgrades available (\$10 per month)	Free to join; upgrades available (\$300 to \$1000 per month)
Most popular businesses reviewed	Home services, health care	Restaurants, nightlife, spas, travel	Restaurants, retail, services	DND	Retail, restaurants, home/local services
Number of registered users	2 million	DND	n/a; all Google accounts are eligible	18 million	DND, but had 61 million unique visitors in Q3 2011
Total number of reviews written	DND	DND	5 million	56 million	22 million

CHART NOTES: DND = Does not disclose; n/a = not applicable.

Citysearch

User reviews are less prominent here, and the volume of advertising can make it tough to find legitimate results. And as with Yelp, restaurants and bars are by far the biggest draw.

Claiming your business's page is free. Upgrades let you enhance your listing page with bios, photos, and video. Upgraded accounts can also add deals and special offers, respond to user reviews, and run targeted ads on the site. Pricing is performance-based.

Google Places

Now adding a million reviews a month, Google Places is becoming one of the fastest-growing services on this list.

Tightly integrated with Google's search and map services, Google Places is free for both users and businesses, and results automatically show up during searches. Once businesses claim their Place, they can flesh out their information, add interior photos and videos, and respond to reviews. But to promote your business further, you'll have to turn to Google's AdWords.

To curb abuse, businesses can flag any bad or malicious content as inappropriate through links on every page.

Given the popularity of Google services in general—as well as Places' zero-dollar price tag—you should claim your Google Place page, keep it updated with photos, and promptly address any concerns that users may raise.

Yahoo Local

Similar to Google Places, Yahoo Local automatically adds reviews to search results and maps users generate via searches on the broader Yahoo network.

It has more than 50 million reviews, and tens of millions more available via professionally curated partner content.

Claiming your business's listing is free. Upgrades (with more information on your page, photos, and the option to add coupons) cost \$10 per month.

SIMPLY BUSINESS

The Best Microsoft Office Alternative



RICK BROIDA

Kingsoft Office Suite delivers robust word processing, spreadsheets, and presentations at a fraction of the cost.

BUSINESS STILL REVOLVES around the Big Three software applications: word processing, spreadsheets, and presentations. And Microsoft still charges an arm and a leg for Office licenses. What's a cash-strapped small shop to do?

A number of free alternatives to Microsoft Office—most notably OpenOffice.org and LibreOffice—are available (for the latter, see find.pcworld.com/72780). But OpenOffice faces an uncertain future, and LibreOffice is bogged down by a clumsy, outdated interface and iffy file compatibility.

Allow me to suggest a lesser-known alternative: Kingsoft Office Suite 2012 (find.pcworld.com/72746). I've been test-driving it, and I really like it.

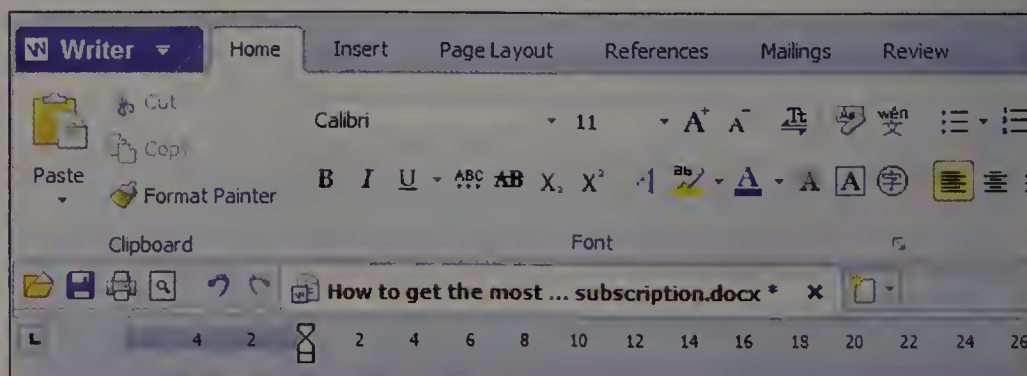
Kingsoft's suite has three modules: Writer, Spreadsheets, and Presentation. They're fully file-compatible with Word, Excel, and PowerPoint; I had no trouble loading my existing documents or saving new ones in Microsoft formats.

In features, the Kingsoft suite has one big ace up its sleeve: a tabbed view for documents, something that Microsoft Office still lacks. Each open document gets its own tab, just as different websites get tabs in your browser. That makes switching between them much easier than in Microsoft Office.

Kingsoft offers Free, Standard, and Professional editions, the latter two priced at \$50 and \$70, respectively. Which one should you get? You could start with the free one: Its interface is immediately familiar to anyone fluent in Microsoft Office 2003, and the only significant feature it lacks is macro support.

If your employees are already accustomed to Office 2010's Ribbon interface, consider investing in Kingsoft Standard or Professional. Both give you a choice between the aforementioned Office 2003-style interface and one that looks right out of Office 2010. (You can even switch back and forth between the two.)

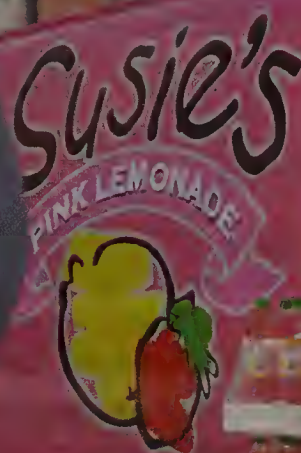
Both the Free and Professional versions are excellent, but I prefer Pro for its Ribbon-style interface—and at \$70, it costs much less than Microsoft Office Professional 2010, which starts at \$350. Granted, the latter also includes Outlook, Publisher, and Access. However, if you don't need those tools, but you do need the Big Three apps, then Kingsoft Office is worth a look.



KINGSOFT OFFICE'S WRITER module looks just like Microsoft Word.



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TECH AUDIT

Where Solid-State Drives Fit Into Your Business



LOGAN G. HARBAUGH

SOLID-STATE DRIVES are an increasingly popular choice for businesses looking for faster performance and lower power consumption than conventional magnetic hard-disk drives can provide. As SSDs decline in price and improve in performance, they are finding their way into server farms, laptops, and desktops.

Data centers have several ways to use SSDs: in conjunction with other storage, as cache, or as tier-zero storage—the best and fastest level of storage. With a tiered arrangement, you can store the most-used files on SSDs, relegating less-accessed ones to slower media. SSD capacity is growing, but still carries a high cost per gigabyte compared with hard drives. Where can you get the best use of SSDs? Here are some answers.

1 SSDs make great boot drives: With a desktop, it's possible and often appropriate to have an SSD as a boot drive and a high-capacity hard disk as a data drive. This setup gives you great performance for boot-ups and important applications, while retaining lots of inexpensive capacity to store files that

Traditional hard drives are increasing in price, while SSD prices are dropping. Is it time to start using SSDs throughout your company?

don't require exceptional performance. (See find.pcworld.com/72762 for one SSD model that makes an excellent boot drive.)

2 Use SSDs in hybrid solutions: In data centers, SSDs can improve database or virtual desktop infrastructure performance. Storage systems using SSDs as cache or tier zero provide SSD performance along with the inexpensive capacity of hard drives. But applying this dual-drive approach to laptops requires having a unit large enough to support two disk drives, or buying the rare laptop that has the SSD integrated into the motherboard but still offers a 2.5-inch bay for a hard drive.

3 Use SSDs to accelerate the most important applications and data: Some systems can use SSDs transparently, but in many cases you'll want to set up different storage volumes and make sure that the most important data resides on SSDs. For instance, since video and audio files play back in real time, disk performance is seldom an issue, though creating or manipulating audiovisual files is a different story. User directories

that consist of text files and the like also don't require high performance. In contrast, databases, content that users search often, or graphics-intensive data files all can make good use of the higher performance of SSDs.

4 SSDs yield big power savings for data centers but not laptops: One of the earliest uses of SSDs was in laptops, where manufacturers assumed they would help battery life. But the backlight of the screen, the CPU, the memory, and the graphics chipset all use much more power than the drive, whether hard disk or SSD. Though SSDs do use less power than hard disks, a savings of 90 percent in a subsystem that uses only 1 percent of total power is hard to justify. In enterprise systems, however, the power savings from using SSDs instead of hard disks are high—but they alone won't compensate for the much steeper cost of the drives, especially since the highest-capacity SSDs are still only around a sixth the size of the biggest hard drives. ●

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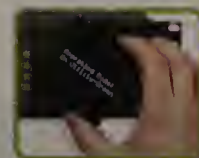
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Security Alert

Watch Out for Malicious Web Apps

BY TONY BRADLEY

WEB APPS ARE great. They're available for use virtually anywhere, anytime, from practically any device that has a Web browser. Web apps are also easy to update and maintain:

The developer tweaks the app on the Web server, and everyone who uses it has access to the latest version.

But Web apps can contain more than you bargained for, and in some instances they may actually be malicious. You need to be aware of the risks that Web apps can pose, and know how to protect yourself.

These days, a Web app can be malware. Here's what you need to know about this new threat, and what to watch for.

How Can a Web App Be Dangerous?

A Web app is essentially a full-fledged application that runs within your Web browser. Just as easily as a Web app can track your reminders or play a game, it can infect your PC.

Cameron Camp, a security researcher at ESET, says that Web apps rely on popular Web development technologies such as Java or ActiveX, which malware writers have used to deliver malicious exploits. Adobe Flash is another common Web app platform that malware writers frequently target.

Tim Keanini, CTO of nCircle, says cyberattackers are talented, creative developers who are motivated to find innovative ways to part you from your money or information.

As for Web apps, Camp warns, "While they allow increased functionality within the browser, users should be aware of how deeply into your system they may be able to reach."

Some malware attacks try to entice you to click a link in an email message, which then connects to a malicious Web app that infects your PC with malware. Other tainted apps lurk on



the Web, waiting for victims to wander by. In some instances, attackers have exploited vulnerabilities on a website or have employed poisoned ads to get malware-bearing Web app content uploaded to an otherwise legitimate and trusted site.

Don't assume that you're safe if you avoid Microsoft Windows. Web apps do frequently target specific vulnerabilities, and Windows is often a primary focus, but Web apps—both benign and malicious—are fundamentally platform-agnostic.

Defending Against Web App Attacks

Keanini of nCircle says that the best protection from malicious Web apps is also one of the most difficult safeguards to implement: educated users who are mindful of online security.

Rule number one is simple: If you have any doubt, don't click. This single rule would help people avoid most Web app malware, but it seems to be hard to drill into users' heads.

Given that an ill-advised click is almost inevitable, your next line of defense is to keep your security software up-to-date: Most such software can spot malicious behavior and can >>

block many unknown threats as well, but the strongest protection comes from having updated security software that can identify current threats.

Malicious Web apps exploit vulnerabilities in your operating system or third-party applications to compromise your PC. You should enable Automatic Updates for Windows and other software that provides automatic updating. Apply new updates as soon as they become available, in case exploit code is already circulating in the wild.

As Web-based attacks have evolved, browser makers have added security features to protect your system. Most current browsers have features to help identify the true root domain of a given website (so you don't get taken in by a phishing scam), and have controls in place to block malicious Web code. If you are using an outdated browser, though, it will protect you only against outdated threats, leaving you virtually defenseless against the latest malware.

Malice Aforethought

A malicious Web app may be able to access information across tabs from within the same browser session. So if you open a tab to a secure site—typically indicated by the “https” at the beginning of the URL—don't open additional tabs to lower-security (non-https) sites within the same browser window.

You should also treat browser plug-ins and add-ons with caution. Plug-ins and add-ons are great for expanding the capabilities of your browser and for making certain tasks more convenient, but they may also contain poorly written code with weak spots that Web-based malware can exploit. Choose your plug-ins and add-ons carefully—and only from organizations you trust.

Make sure you understand the nature of the threats, and take steps to recognize and defend against harmful Web apps so that you can productively enjoy the vast majority that aren't malicious.

BUGS & FIXES

Adobe Cross-Site Scripting Flaws



JAMES MULROY

Plus: Apple releases a security update to patch numerous vulnerabilities.

THIS MONTH ADOBE patched critical flaws, including a Flash bug that could allow hackers to contaminate your website. In addition, Apple released a security update to fix problems in OS X Lion, and Mozilla patched two weaknesses that could let an attacker run malware on your system.

Adobe security updates: Adobe recently released three security updates for Adobe Flash Player, Shockwave Player, and RoboHelp 8 and 9 for Word that address several important and critical vulnerabilities.

A vulnerability—rated Important—in RoboHelp 8 and 9 could lead to the launching of a cross-site scripting attack through RoboHelp Web-based output. Remote attackers could use it to inject malicious Web script or HTML into your website.

Critical flaws in versions of Adobe Flash Player for Windows, Mac, Linux, Solaris, and Android could cause your program to crash, and might allow an attacker to take control of your system. The update also fixes a cross-site scripting vulnerability that an attacker could use to act as you on any website or in webmail if you visit a tainted website. Users should update to Flash Player 11.1.102.62 for Windows, Mac, Linux, and Solaris; version 11.1.115.6 for Android 4.x; and version 11.1.111.6 for Android 3.x and 2.x to get the fixes.

Adobe also fixed overflow and memory corruption bugs in Adobe Shockwave Player 11.6.3.633 and earlier for Windows and Mac. You should update to 11.6.4.634.

For more about these updates or to install them manually, see find.pcworld.com/72755 and find.pcworld.com/72756.

Apple bug fixes: Security Update 2012-001 for OS X Lion 10.7.3 fixes a number of bugs across the OS, including vulnerabilities affecting Address Book, weak certificate keys, FreeType font rendering, and QuickTime.

Apple's update adds an extra layer of security to Address Book to ensure that the program won't connect to CardDAV—an address book server protocol—over an unencrypted connection without your approval. The fix also corrects multiple vulnerabilities in QuickTime. Run *Software Update* under the Apple menu to get this patch. To learn more about this update, visit find.pcworld.com/72757.

Mozilla patches: Mozilla released patches for two critical security flaws involving an integer overflow and a bug that might permit remote denial-of-service attacks or execution of arbitrary code through a function call—a type of expression or a combination of variables that computes and produces another value.

Be sure to update to Firefox 10.0.1, 10.0.2, and ESR 10.0.1; Thunderbird 10.0.1, 10.0.2, 3.1.19, and ESR 10.0.1 and 10.0.2; and SeaMonkey 2.7.1 and 2.7.2. To find out more about these updates, visit find.pcworld.com/72656.



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Companies Agree on App Privacy Policy

THE STATE OF California and six major tech companies agreed to strengthen privacy protections for consumers who buy smartphone and tablet apps.

California will work with Amazon, Apple, Google, HP, Microsoft, and Research In Motion to ensure that all apps sold through the companies' app markets will conform to a state law under which any app that collects personal information must include a privacy policy that outlines what data it collects, and what it does with that information.

Under existing California law, if a website or app collects any personal data from even a single resident of the state, it must provide a privacy policy for its users. And since these app stores are accessible worldwide to anyone who has an Internet connection, California residents won't be the only ones to benefit from these new guidelines.

Under the agreement, the app markets must give users a chance to review an app's privacy policy before installing it on their smartphone or tablet, and the wording must appear in "a consistent location for an app's privacy policy on the application-download screen," so users will know where to look.

App makers that fail to conform to these standards may be prosecuted under California's Unfair Competition Law or False Advertising Law.

The agreement is the product of six months of voluntary collaboration between the California attorney general's office and the six companies. Attorney General Kamala Harris invited the companies to sit down and devise ways to improve mobile app privacy.

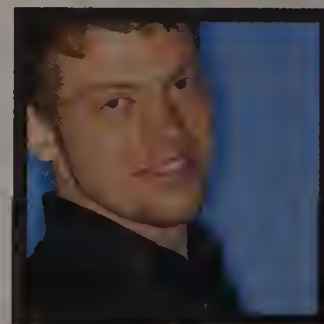
The changes should roll out into the app stores over the next few months.

—Nick Mediati

PRIVACY WATCH

Mozilla at Work on Mobile Do Not Track

The Boot to Gecko project aims to build convenient Do Not Track settings into an open-source mobile operating system.



ALEX WAWRO

YOU CAN OPT out of being tracked online by using a Web browser with support for Do Not Track, a privacy feature that lets you tell supporting websites that you don't want to be tracked by third parties (advertisers, marketing firms, and the like). It's like putting yourself on an online version of the Do Not Call list.

Now Mozilla is developing an open-source operating system for smartphones and tablets that supports Do Not Track from the ground up. Code-named Boot to Gecko (B2G), this Linux-based mobile OS is designed to bring the (comparatively) rigorous privacy standards of the World Wide Web to smartphones and tablets.

Mozilla's Open Web Devices platform (B2G's technical name) is still in an early stage of development. To test it, you must root your Android phone and manually flash B2G to your device—but don't try to do this unless you're comfortable tinkering with (and maybe breaking) your phone.

A Simpler Opt-Out Process

The Do Not Track options in the Boot to Gecko operating system make opting out simpler. If your smartphone or tablet runs Boot to Gecko, you'll be able to set Do Not Track preferences from the settings menu, and your device will broadcast your preferences to every app you open. This will help you maintain personal privacy while browsing websites, and it may prevent other apps from harvesting your personal data, if their developers update them to respect the Do Not Track option.



Boot to Gecko is heavily Web-centric: All B2G apps live online, and you access them directly instead of downloading them from an app store like the Android Market. Making Boot to Gecko open-source and letting it run apps from any developer should improve user privacy. Just as many websites maintain consumer-friendly privacy practices to keep users happy, Mozilla and other developers

will create consumer-friendly apps in order to compete in the open market.

Unfortunately, since Do Not Track is a voluntary, honor-system-based program, there is no mechanism for ensuring that the apps you access and the sites you visit will honor your request for privacy. Until we see federal legislation that requires companies to respect and comply with Do Not Track requests from consumers (similar to California's proposed Do Not Track law), you have no guarantee that your favorite apps and websites won't track your habits and breach your privacy. But plenty of free software for protecting your privacy is available online, so practice safe surfing and don't download apps from untrustworthy sources. ●

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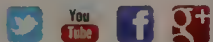
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Network-Attached Storage: Today's Best Boxes



SYNOLOGY DS212+

Ethernet-attached storage boxes look much as they did two years ago, but their speed, interfaces, and features have evolved.

THE NETWORK-ATTACHED storage box—an external storage device that attaches to your network router rather than directly to your PC—has become an essential tool for sharing data and media.

Today's top NAS boxes also handle backups in conjunction with online storage services, link to mobile devices for sharing, act as video surveillance controllers, and even work as Wi-Fi hotspots.

Since it uses network protocols to transfer data, a NAS box is operating system-agnostic: Windows, Mac, and Linux PCs alike can use the storage without special drivers. Usually, the connection relies on wired ethernet, but some boxes can connect wirelessly. Most NAS boxes

have two to eight hard-drive bays and use RAID for data redundancy. Modern NAS boxes run a full-blown server OS—in most cases Linux, but occasionally Windows Storage Server 2008. Either way, remote management takes place via a Web browser or client software.

We tested five two-bay NAS boxes, and six three-or-more-bay units, and examined their feature sets. The charts on pages 42 and 44 summarize what we found.

The USB 3.0 ports on

MORE ONLINE

For complete reviews of the NAS boxes we tested for this story, go online to find.pcworld.com/72793.



46 APPLE IPAD (third generation)



47 XEROX MOBILE Scanner



57 PANTECH BURST

some premium models are the main outward sign of change. Common external features include USB 2.0 and eSATA ports for sharing printers or backing up to external storage; solo or dual ethernet jacks (dual for connection sharing or redundancy); and direct copy buttons for copying the contents of thumb drives and other storage attached to the NAS box without the need to access the box's HTML interface.

Inside, faster CPUs and chipsets, and more memory, have improved performance significantly. Pricier, high-end boxes for small business can now read data at rates up to about 110 MBps and write it at about 100 MBps—almost twice as fast as most internal or direct-attached drives. Consumer-grade NAS boxes, though far more affordable, lack the punch of top-of-the-line products.

If you occasionally back up one or two PCs, or stream media, any of the boxes we tested will meet your needs. But if you regularly back up multiple PCs in an office, deal with large amounts of

data, or stream to multiple locations, you'll likely find that high-end performance is worth paying extra for.

In addition to supporting standard RAID levels (0, 1, 5, 1+0, and so on), some vendors now automatically configure drives into the optimal array, even implementing data redundancy. In most cases you don't have to use like-capacity drives either, though doing so is still optimal.

Today DLNA-certified media serving, iTunes serving, website serving, and remote access to the NAS interface and files via HTML, FTP, Webdav, and other protocols are considered standard. Newer features include backup to online storage services, access to files from mobile phones and tablets, and remote backup and synchronization across local networks and the Internet.

NAS software interfaces have improved, too. Synology's latest

3.x and 4.x OSs are able to function as a windowed operating system in a browser.

Feature-rich NAS boxes

can save you money in the long run by rendering software services that you formerly had to farm out. >>



SYNOLOGY DS712+

Our top pick among two-bay NAS boxes is the Synology DS712+; the top-ranked box with three or more bays is the QNAP TS-459 Pro II.

Synology DS712+

The Synology DS712+, available with or without hard drives, is a two-bay NAS box that can connect to Synology's five-bay DX510 external expansion unit to manage up to seven drives. Besides its expandability, the DS712+ offers Synology's capable OS and excellent performance.

Hardware features include two front-locking drive bays, dual ethernet ports that support aggregation for faster

The capabilities of the latest generation of network-attached storage boxes extend far beyond those of earlier NAS boxes, which simply served and streamed files to PCs.

throughput as well as fail-over (when one connection fails, the other takes over), three USB 2.0 ports for attaching peripherals, and a single eSATA port for fast external storage. Regrettably absent is a USB 3.0 port.

With 1GB of DDR3 memory and an Intel Atom D425 1.8GHz CPU, the DS712+ wrote a 10GB collection of folders and mixed files at 55 MBps and read those files at 51 MBps. It handled a single large 10GB file even better,

at 79 MBps and 105 MBps, respectively. Only QNAP's TS-459 Pro II and TS-879 Pro had better overall marks.

The DS712+ runs Synology's Linux-based DiskStation Manager 4.0 OS, which has features like remote access via HTTP, HTTPS, FTP, SFTP, Webdav, and audio, video, and image servers. Plus, it provides iTunes and DLNA-certified media serving; a Wi-Fi connection via a dongle; and (new to the DiskStation Manager 4.0 operating

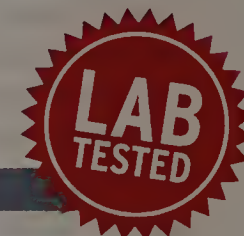
system) the ability to serve as a Wi-Fi hotspot. The box also supports remote synchronization via Rsync or proprietary means; video surveillance; and more.

The DS712+ is superfast, works with the DX510 five-bay expansion unit, and has a top-notch OS. But it costs \$500 without hard drives, and \$790 (as we tested it) with 2TB of storage; and to us, the omission of USB 3.0 smacks of penny-pinching.

QNAP TS-459 Pro II

You can't find a faster four-bay NAS box than QNAP's TS-459 Pro II. But at \$1180, this feature-laden NAS is not

Top 5 NAS Boxes: One or Two Bays



MODEL	Rating	Performance	Features and specifications
1 <p>Synology DS712+ \$790 find.pcworld.com/72770</p> <p>► Though it lacks some consumer-friendly features, this box can expand to seven drives and offers dual gigabit ethernet ports.</p>	★★★★★ SUPERIOR	<ul style="list-style-type: none"> • Tested capacity: 2TB¹ • USB 2.0, eSATA, dual gigabit • Two bays 	<ul style="list-style-type: none"> • Overall performance: Perfect • Write/read multiple files: 55 MBps/51 MBps • Write/read large file: 79 MBps/105 MBps
2 <p>Synology DS212+ \$670 find.pcworld.com/72771</p> <p>► The best two-bay consumer box we've seen, the DS212+ has tons of software features plus a front SD slot for copying media to the unit.</p>	★★★★★ SUPERIOR	<ul style="list-style-type: none"> • Tested capacity: 2TB¹ • USB 3.0, eSATA, SD Card slot • Two bays 	<ul style="list-style-type: none"> • Overall performance: Superior • Write/read multiple files: 46 MBps/4B MBps • Write/read large file: 62 MBps/109 MBps
3 <p>LaCie 2Big Network \$350 find.pcworld.com/72803</p> <p>► This stylish two-bay box offers excellent basics, media serving, and a clean interface—but it's the slowest unit on the chart.</p>	★★★☆☆ GOOD	<ul style="list-style-type: none"> • Tested capacity: 2TB • USB 2.0 • Two bays 	<ul style="list-style-type: none"> • Overall performance: Good • Write/read multiple files: 20 MBps/35 MBps • Write/read large file: 32 MBps/54 MBps
4 <p>Western Digital My Book Live Duo 4TB \$380 find.pcworld.com/72772</p> <p>► Ease of use and lots of capacity for the buck make this two-bay box well suited for basic media streaming and file sharing.</p>	★★★☆☆ GOOD	<ul style="list-style-type: none"> • Tested capacity: 4TB • USB 2.0 • Two bays 	<ul style="list-style-type: none"> • Overall performance: Very Good • Write/read multiple files: 28 MBps/36 MBps • Write/read large file: 46 MBps/91 MBps
5 <p>BEST BUY Buffalo Linkstation Pro Duo \$380 find.pcworld.com/72773</p> <p>► Buffalo's two-bay box offers some advanced software features, and it streams media well, but it delivers middling performance overall.</p>	★★★☆☆ FAIR	<ul style="list-style-type: none"> • Tested capacity: 2TB • USB 2.0 • Two bays 	<ul style="list-style-type: none"> • Overall performance: Very Good • Write/read multiple files: 2B MBps/41 MBps • Write/read large file: 64 MBps/69 MBps

CHART NOTES: Ratings are as of 3/9/12. TB = terabytes. MBps = megabytes per second. FOOTNOTE: ¹ Diskless versions are also available.

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With a 1.8GHz Intel Atom D525 dual-core CPU and 1GB of memory, the TS-459 Pro II turned in the second-best performance of any box in our 11-model roundup. Only QNAP's TS-879 Pro outperformed it. The TS-459 Pro II wrote our large 10GB file at 99 MBps and read it at 111 MBps; the unit wrote 10GB of smaller files and folders at 64 MBps and read the same files at a considerably less brisk 49 MBps.

As befits its hefty price, the TS-459 Pro II has top-notch hardware. On the front of the unit, you'll find four locking drive bay trays, an LCD status display, a USB 3.0 port (most boxes offer only USB 2.0 on the front panel), and a quick-copy button. You'll also find Enter and Select buttons next to the LCD, for setting the initial array type when you add drives.

On the back of the TS-459 Pro II, QNAP supplies dual ethernet ports to support

failover and aggregation, two eSATA ports for adding storage or backup, another USB 3.0 port, four USB 2.0 ports for printers and other peripherals, and a Kensington lock port for securing the NAS box physically.

QNAP recently updated its operating system from version 3.5 to version 3.6, expanding and improving on an already impressive feature set that should have plenty of appeal for both business users and enthusiast home

users. New to version 3.6 are LDAP directory serving (version 3.5 already supported basic LDAP), VPN serving, support for Symform peer-to-peer backup, and many improvements to existing applications. Features retained from the earlier OS include remote access in many forms (among them, dedicated photo, music, and video web servers); iSCSI; Rsync and real-time server syncing; and Web serving.

—Jon L. Jacobi

Top 6 NAS Boxes: Three or More Bays



MODEL	Rating	Performance	Features and specifications
1  BEST BUY QNAP TS-459 Pro II \$1180 find.pcworld.com/72804	★★★★★ SUPERIOR	<ul style="list-style-type: none"> • Tested capacity: 4TB¹ • USB 3.0, eSATA, dual gigabit • Four bays 	<ul style="list-style-type: none"> • Overall performance: Superior • Write/read multiple files: 64 MBps/49 MBps • Write/read large file: 99 MBps/111 MBps
<p>► Four-bay boxes don't get any faster or more feature-packed than the TS-459 Pro II. If you can afford it, you'll love it.</p>			
2  QNAP TS-879 Pro \$2920 find.pcworld.com/72765	★★★★★ SUPERIOR	<ul style="list-style-type: none"> • Tested capacity: 6TB¹ • USB 3.0, eSATA, dual gigabit • Eight bays 	<ul style="list-style-type: none"> • Overall performance: Superior • Write/read multiple files: 71 MBps/54 MBps • Write/read large file: 111 MBps/112 MBps
<p>► Speed, superior capacity, and great software send this box soaring up the chart; unfortunately, it's very expensive.</p>			
3  Iomega PX6-33d \$1765 find.pcworld.com/72766	★★★★★ VERY GOOD	<ul style="list-style-type: none"> • Tested capacity: 8TB¹ • USB 3.0, dual gigabit • Six bays 	<ul style="list-style-type: none"> • Overall performance: Very Good • Write/read multiple files: 48 MBps/56 MBps • Write/read large file: 77 MBps/91 MBps
<p>► This NAS box has six bays and excellent software features, and it was a strong performer in our write/read tests.</p>			
4  LaCie 5Big Network 2 \$900 find.pcworld.com/72767	★★★★ GOOD	<ul style="list-style-type: none"> • Tested capacity: 5TB • USB 2.0, eSATA, dual gigabit • Five bays 	<ul style="list-style-type: none"> • Overall performance: Fair • Write/read multiple files: 17 MBps/34 MBps • Write/read large file: 29 MBps/58 MBps
<p>► The Lacie 5Big Network has style to burn—along with good software features. What's missing, however, is performance.</p>			
5  Western Digital Sentinel DX4000 \$900 find.pcworld.com/72768	★★★ FAIR	<ul style="list-style-type: none"> • Tested capacity: 4TB • USB 3.0, 2 gigabit • Four bays 	<ul style="list-style-type: none"> • Overall performance: Good • Write/read multiple files: 36 MBps/57 MBps • Write/read large file: 58 MBps/83 MBps
<p>► Running Windows Storage Server 2008 Essentials, the Sentinel DX4000 is a nice piece of hardware limited by mediocre software features.</p>			
6  Netgear ReadyNAS NV+ v2 \$400 find.pcworld.com/72769	★★★ FAIR	<ul style="list-style-type: none"> • Tested capacity: 2TB • USB 3.0 • Four bays 	<ul style="list-style-type: none"> • Overall performance: Fair • Write/read multiple files: 26 MBps/37 MBps • Write/read large file: 37 MBps/86 MBps
<p>► Great hardware features and an elegant interface highlight a box that is thin on software features and has poky performance.</p>			

CHART NOTES: Ratings are as of 3/9/12. TB = terabytes. MBps = megabytes per second. FOOTNOTE: ¹ Diskless versions are also available.

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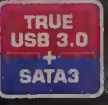
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Apple iPad: The Retina Display Redefines the Tablet



AT FIRST GLANCE the 2012 refresh of Apple's iPad seems little different from the iPad 2. But that impression changes once you turn it on: That's when the new iPad not only takes your breath away but also demonstrates how Apple has redefined the tablet game—again.

Other tablet makers struggle to offer innovation at the same price the baseline iPad 2 has had for a year. Apple is selling its third-gen model (called "iPad," not "iPad 3") with a dramatically improved display at the same prices as before: \$499 for 16GB, \$599 for 32GB, and \$699 for 64GB, plus \$130 more to add AT&T or Verizon LTE 4G (mobile broadband service extra; at launch, only Verizon offers mobile hotspot services).

You may want to spring for more storage, since the iPad doesn't offer expansion slots. The 64GB iPad I tried had only 57.17GB available to me before I downloaded a thing. And your apps, images, and 1080p videos will take more room than before; my imag-

es, imported via iTunes, occupied more than twice the space on this iPad that they took up on the iPad 2.

Impressive Colors

Last year I was disappointed to see that the iPad 2 did not have a Retina display; by then I was used to the iPhone 4's higher-pixel-density screen, and I was loath to settle.

With the new iPad display, you're definitely not settling. This is the first tablet we've tested to get Superior marks, the highest rating, across our subjective screen-quality evaluation. On our grayscale test pattern, the 2048-by-1536-pixel, 9.7-inch display produced the best balance of blacks and whites we've seen. On our color-bar chart, it had a lovely spread of hues, with no colors blown out at the far end. Colors looked warmer than on the iPad 2; in fact, their richness made the images we transferred via iTunes seem just shy of being oversaturated.

In a group-portrait photo matching the iPad's native resolution, the screen had the most realistic skin tones and the best handling of neutral browns we've seen. And on a 4K-pixel (3888-by-2592-pixel) image that we allowed iTunes to optimize for display on the iPad, we saw outstanding detail and more subtle color gradations than



we've encountered on any other tablet to date.

Text was universally crisp, with no jaggies—not surprising, given the screen's outstanding 264 pixels per inch. We quickly noticed, however, that the Retina display and Apple's upscaling can't perform miracles. Web images, plus graphics in games, apps, and many magazines in the Newsstand, were disappointingly fuzzy and overblown. Apps will catch up, eventually; it's a matter of developer resources and time.

Better Inside and Out

Is an iPad with a Retina display worth the money, versus an iPad 2 at \$100 less? Yes—you will see the differ-

ence every time you read on it, every time you use an app with optimized graphics, and every time you view pictures.

You'll also see the difference when you play or capture a 1080p movie, or take photos with the 5-megapixel camera (now dubbed "iSight," and vastly improved over the iPad 2's pitiful less-than-1-megapixel camera). The camera app is a pleasure to use compared with those on Android tablets, too. Sure, it lacks finer exposure controls, but Apple's app works more smoothly—it's quick to focus, and it's responsive.

The new iPad runs an A5X dual-core Cortex A9-based system-on-chip, and has a quad-core graphics engine.

★★★★★ SUPERIOR

iPad (third generation) | Apple Better-than-HDTV display helps advance tablets to the next level. List: \$499 (16GB), \$599 (32GB), \$699 (64GB); \$130 extra for 4G find.pcworld.com/72800

That translates into what appears to be fairly powerful graphics muscle, and solid overall performance. In the benchmark tests that we ran, the iPad excelled at some metrics. (See "Android Tablets: Is It Game Over?" on page 13 for some analysis of how the new iPad stacks up to top Android competitors.)

How good it looks and how well it performs will depend on the content you view. Books, magazines, apps, and Web pages have the potential to look great, and tablet-optimized games will be able to advance in graphical complexity far beyond what we have today. But until developers catch up and make the shift, be prepared: Your re-

How good the new iPad looks and how well it performs will depend on the content you view. Books, magazines, apps, and Web pages have the potential to look great.

sults will vary dramatically.

Though this iPad lacks Siri support (an odd omission), it does integrate voice recognition. I like using the Nuance-powered speech recognition tool, but I don't like needing to be connected online for it (similar to Siri on the iPhone 4S, it calls the Apple servers, which provide the service). It was accurate and responsive in my testing, though.

Weighty Issues

At 0.37 inch, the new iPad is slightly thicker than the iPad 2 (0.34 inch), the Samsung

Galaxy Tab 10.1 (0.34 inch), and the Asus Eee Pad Transformer Prime (0.33 inch).

Increasing the girth was necessary to accommodate a bigger battery, a 4G radio (on some models), and the Retina display. I'm more concerned about the weight: The Wi-Fi-only iPad weighs 1.44 pounds, and the 4G model is 1.46 pounds—an increase from the iPad 2's weight of 1.33 pounds for the non-3G version and 1.35 pounds for the 3G unit. Heavier is not the right direction for tablets to take; Android competitors, in

fact, are becoming lighter.

The difference in weight is palpable, and it may become an issue as you work with your iPad, using your dominant hand to navigate, and your weaker hand to support the device. It's also a shame, because this iPad makes reading on an LCD more viable than ever, yet the added weight will deter many people from engaging in long reading sessions.

Although the extra weight is a drawback, it doesn't hurt the new iPad's ascent to the throne. If you're in the market for a tablet—and if you don't mind the tethers that iOS and Apple impose—the new iPad is the clear winner.

—Melissa J. Perensan

Xerox Mobile Scanner: A Versatile Companion

ABOUT THE SIZE of a roll of foil and weighing around 1.5 pounds, the Xerox Mobile Scanner (\$250) can turn printed items into PDFs or JPGs, and then send the images wirelessly to a PC, a mobile device, or the Web in a matter of seconds.

Made by Visioneer (which sells a similar but not identical product under its brand),

this sheet-fed scanner innovates in its use of a specially made Eye-Fi storage and wireless-adaptor card, which can hold up to 4GB of scans. To transfer images, you simply launch the free software on your Windows or Mac computer, or on your Android or iOS device. (You'll have to create a free Eye-Fi account to use the wireless features.)

Scanning is fairly straightforward. The device has a power button and a function button for cycling among the three scan formats (color JPG, color PDF, or black-and-white PDF, all captured at 300 dpi). It can scan items



THE XEROX MOBILE Scanner can send items wirelessly, or over a USB cable.

as small as business cards or as large as standard letter paper, taking about 10 seconds to scan one sheet.

I had only minor quibbles, mostly stemming from the skimpy printed documenta-

tion. For instance, you have to go to the online manual to learn how to set up the Eye-Fi card and to interpret the error codes, which appear in the form of flashing LEDs.

—Yardena Arar

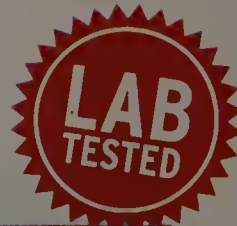
★★★★★ SUPERIOR

Mobile Scanner | Xerox

Useful business tool rapidly digitizes and transmits printed items.

List: \$250

find.pcworld.com/72761



Top 10 All-Purpose Laptops

MODEL	Rating	Performance	Features and specifications
1  BEST BUY Dell XPS 14z \$1199 find.pcworld.com/72431	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 136 WorldBench 6 rating: Superior Overall design: Very Good Tested battery life: 5:29 	<ul style="list-style-type: none"> 2.8GHz Core i7-2640M 14.0-inch widescreen 4.4 pounds 750GB hard drive
▶ Dell's XPS 14z offers a balanced approach to a thin-and-light, full-featured laptop, but it has only two USB ports.			
2  HP Pavilion dv6 \$799 find.pcworld.com/72074	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 117 WorldBench 6 rating: Very Good Overall design: Superior Tested battery life: 4:41 	<ul style="list-style-type: none"> 2.3GHz Core i5-2410M 15.6-inch widescreen 5.7 pounds 640GB hard drive
▶ HP's Pavilion dv6 is a classy-looking (though slightly bulky) laptop with a good mix of features for its price.			
3  Lenovo ThinkPad T420 \$1249 find.pcworld.com/72209	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 124 WorldBench 6 rating: Very Good Overall design: Very Good Tested battery life: 8:37 	<ul style="list-style-type: none"> 2.5GHz Core i5-2520M 14.0-inch widescreen 5.2 pounds 500GB hard drive
▶ The venerable ThinkPad T420's staid countenance belies this machine's outstanding performance, reliability, and features.			
4  MSI X460DX \$849 find.pcworld.com/72432	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 120 WorldBench 6 rating: Very Good Overall design: Very Good Tested battery life: 6:04 	<ul style="list-style-type: none"> 2.3GHz Core i5-2410M 14.0-inch widescreen 4.5 pounds 500GB hard drive
▶ A well-rounded system, the MSI X460DX is a slim yet powerful all-purpose notebook available at a fairly affordable price.			
5  Gateway ID47H02u \$699 find.pcworld.com/72435	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 116 WorldBench 6 rating: Very Good Overall design: Superior Tested battery life: 7:04 	<ul style="list-style-type: none"> 2.3GHz Core i5-2410M 14.0-inch widescreen 4.5 pounds 500GB hard drive
▶ Though the ID47H02u isn't the fastest or most full-featured laptop, Gateway has hit the nail on the head in its design and overall appeal.			
6  Asus U46SV \$899 NEW find.pcworld.com/72727	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 123 WorldBench 6 rating: Very Good Overall design: Very Good Tested battery life: 6:41 	<ul style="list-style-type: none"> 2.4GHz Core i5-2430M 14.0-inch widescreen 4.9 pounds 750GB hard drive
▶ This stylish all-purpose laptop offers great performance, but it's heavy—and you have to remove software bloat to fully appreciate it.			
7  Lenovo ThinkPad Edge E420 \$719 find.pcworld.com/72076	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 98 WorldBench 6 rating: Good Overall design: Superior Tested battery life: 5:05 	<ul style="list-style-type: none"> 2.1GHz Core i3-2310M 14.0-inch widescreen 4.7 pounds 500GB hard drive
▶ Lenovo's affordable, not-too-heavy Edge E420 has an admirable keyboard, but users seeking strong performance should look elsewhere.			
8  Lenovo IdeaPad U400 \$840 NEW find.pcworld.com/72728	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 112 WorldBench 6 rating: Very Good Overall design: Very Good Tested battery life: 4:45 	<ul style="list-style-type: none"> 2.4GHz Core i5-2430M 14.0-inch widescreen 4.3 pounds 750GB hard drive
▶ You won't find a more stylish or more capable all-purpose laptop than the IdeaPad U400, though it needs a Blu-ray drive option.			
9  Sony VAIO S Series \$1000 NEW find.pcworld.com/72729	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 112 WorldBench 6 rating: Very Good Overall design: Good Tested battery life: 4:51 	<ul style="list-style-type: none"> 2.4GHz Core i5-2430M 15.5-inch widescreen 4.3 pounds 640GB hard drive
▶ Sony's VAIO S Series won't win awards for performance or multimedia, but it's a terrific light laptop for business professionals.			
10  HP Envy 15 \$1250 NEW find.pcworld.com/72730	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 119 WorldBench 6 rating: Very Good Overall design: Good Tested battery life: 5:15 	<ul style="list-style-type: none"> 2.4GHz Core i5-2430M 15.6-inch widescreen 5.8 pounds 500GB hard drive
▶ HP might have a satisfying performance laptop in the Envy 15, if it addressed problems with the touchpad and color calibration.			

CHART NOTES: Ratings are as of 2/27/12. Tested battery life is expressed in hours:minutes. Listed weights do not include the power adapter.

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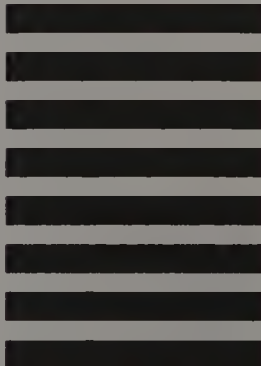
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HP's Folio 13 Ultrabook Is Designed for the Masses



HP'S FOLIO 13 is not the thinnest or lightest Ultrabook. But it offers great performance and battery life, and comfortable typing.

Our \$899, 4-pound (with AC adapter) consumer unit

★★★★★ VERY GOOD

Folio 13 | HP

Solid, speedy Ultrabook balances usability and portability.

List: \$899 (consumer version)

find.pcworld.com/72751

has an Intel Core i5-2467M CPU, 4GB of 1333MHz DDR3 RAM, and a performance-enhancing 128GB solid-state drive. The 13.3-inch, 1366-by-768 display is crisp and backlit. The \$999 business version adds a TPM (Trusted Platform Module) for security, and Windows 7 Professional rather than Home Premium.

Its WorldBench 6 score of 118 is good for a Core i5 PC, and it felt snappy during use. Gaming frame rates were poor, but video playback was



SLIGHTLY THICKER AND heavier than the average Ultrabook, the HP Folio 13 may be a more sensible option for many users.

as smooth as silk. The battery (not user-replaceable) lasted 6 hours, 46 minutes.

The keyboard has a stable feel; its keys can travel farther than those on ultraportables, and the PC has little flex overall. The single-piece

touchpad is appealing, too, but resistance is a bit greater than on most laptops.

The speaker audio sounded loud but muddy. Still, it was a cut above the horrible sound of most Ultrabook speakers.

—Jon L. Jacobi

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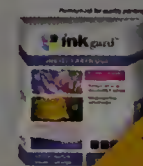
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PowerDVD 12 Ultra: An All-Purpose Media Player

CYBERLINK'S PowerDVD 12 Ultra (\$100) is the Blu-ray/DVD/music/video player to beat. It makes movies look great and audio sound wonderful. The program plays a ton of file types, too.

For Blu-ray, version 12 adds TrueTheater 3D, which turns 2D movies into 3D (sort of).

★★★★★ **VERY GOOD**

PowerDVD 12 Ultra | CyberLink

This resource-hungry software is the best media player available.

Street: \$100

find.pcworld.com/72763

Previously you could use this feature only on DVD movies.

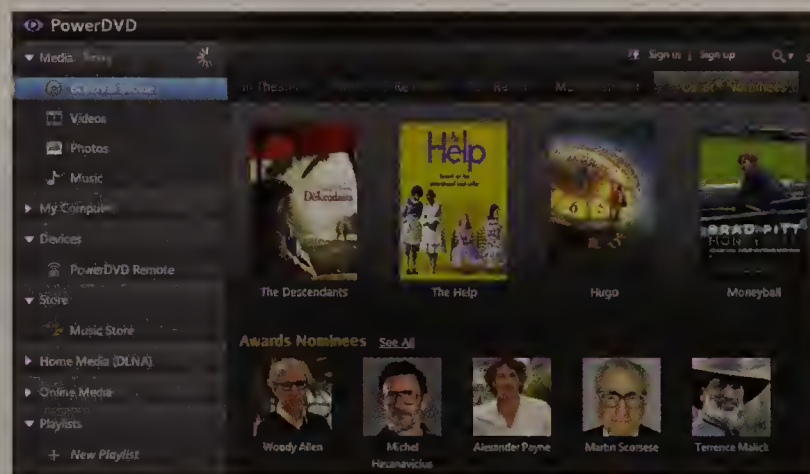
Other new features pertain to organization, streaming, mobile devices, and social media. The revised interface is logical, but navigating the media library and moving between areas were somewhat slow in my tests.

The downside of all the new technology is that it requires a lot of resources. I counted nine PowerDVD-related programs running, consuming close to 500MB of memory. Actual playback is top-notch, though.

You might opt for the \$80 Professional version, which handles Blu-ray but omits some streaming features as well as support for 7.1 audio

codecs. The \$50 Standard version lacks Blu-ray support, which makes it hardly more useful than free alternatives.

—Jon L. Jacobi



POWERDVD 12 INCORPORATES CyberLink's MoovieLive database.



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PlayStation Vita: A Big, Beautiful Gaming Machine

PHONES AND TABLETS have become powerful, cheap, and ubiquitous. With great, inexpensive games readily available on a device you're already carrying every day, is there any reason to spend at least \$250 on a

is big, beautiful, and multi-touch. The display is bright enough that most games and movies are playable in direct sunlight. On-screen content looks great even at extreme viewing angles, and the glossy finish doesn't pick

\$60. You could pay as little as \$20 for a 4GB Vita card, but if you want to store more than a few songs or saved games, you could spend as much as \$100 for a 32GB card. These prices are tantamount to highway robbery,

graphical glitch to speak of.

Battery life was respectable, too: During our tests, we managed to eke out just under 5 hours of fun playing games, watching movies, and listening to music at the device's maximum brightness level and its highest volume setting. Thankfully, completely charging the Vita's battery via the included AC adapter took only about 90 minutes.

Although our test unit came with a 3G radio, we were unable to assess the AT&T 3G performance at the time of our review, as we lacked a compatible 3G SIM card. Once we have tested the Vita's 3G functionality, we will update our online review.

All told, the PlayStation Vita is an excellent gaming handheld that's worth the price if you demand more from your mobile gaming than smartphone or tablet games can provide. If you are willing to tolerate the Vita's physical size and Sony's draconian memory-card pricing scheme, you'll be rewarded with one of the most powerful portable gaming devices ever made.

—Alex Wawro



UNCHARTED: GOLDEN ABYSS, and other games we tested, looked terrific on the PlayStation Vita.

dedicated gaming machine like Sony's PlayStation Vita? I didn't think so—until I spent some time with it.

Superb Design

Measuring just over 7 inches wide and 3 inches tall, the device is surprisingly light, thanks to a reinforced plastic chassis that is difficult to bend or flex. It feels solid, and it's comfortable to hold for extended play sessions. Our 3G-capable Vita (\$299) weighs just under 10 ounces; the \$250 Wi-Fi-only version is lighter still, tipping the scales at just 9 ounces.

The Vita's capacitive 5-inch OLED touchscreen

up smudges easily. With a resolution of 960 by 544 pixels, it isn't as sharp as an iPhone 4S display, but it's the best screen we've ever seen in a gaming handheld.

A similarly large, glossy touchpad sits on the back. Learning to hold the Vita comfortably without accidentally tapping the rear touchpad takes some time.

Expensive Storage

To store items, you must invest in a proprietary Vita memory card, the various sizes of which are ridiculously expensive. Our review unit came with a 16GB card, which currently retails for

especially given that a standard 32GB SanDisk SDHC card costs about \$30.

Terrific Performance

Inside, the Vita carries a quad-core PowerVR Series 5XT SGX543MP4+ graphics processor. The GPU does a wonderful job of rendering both movies and games without a hitch; in testing we played several graphically demanding games (including Lumines Electronic Symphony, Super Stardust Delta, Ultimate Marvel vs. Capcom 3, and Uncharted: Golden Abyss), and every one of the titles looked fantastic, with nary a dropped frame or

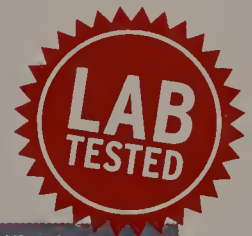
★★★★★ VERY GOOD

PlayStation Vita | Sony

In terms of performance, it's the best game handheld you can buy.

List: \$299 (3G and Wi-Fi)

find.pcworld.com/72750



Top 10 Desktop PCs

MODEL	Rating	Performance	Features and specifications
1  Origin Genesis Z68 \$2464 find.pcworld.com/72273	 SUPERIOR	<ul style="list-style-type: none"> WorldBench 6 score: 228 WorldBench 6 rating: Superior Overall design: Superior Graphics: Superior 	<ul style="list-style-type: none"> 4.3GHz Core i5-2500K 16GB RAM; 1.2TB storage Nvidia GeForce GTX 560Ti (two) Blu-ray Disc drive
<p>► If you're looking for top power and performance at a slightly less than sky-high price, you'll certainly find it in Origin's monster desktop.</p>			
2  Micro Express MicroFlex 79B \$1999 find.pcworld.com/72607	 SUPERIOR	<ul style="list-style-type: none"> WorldBench 6 score: 219 WorldBench 6 rating: Superior Overall design: Superior Graphics: Superior 	<ul style="list-style-type: none"> 3.2GHz Core i7-3930K 16GB RAM; 1.2TB storage Nvidia GeForce GTX 580 BD-R drive
<p>► This system packs Intel's new Sandy Bridge Extreme Edition processor, offering tons of power and great speed for a mere \$2000.</p>			
3  Primordial Computers Satyr \$2999 find.pcworld.com/72549	 SUPERIOR	<ul style="list-style-type: none"> WorldBench 6 score: 211 WorldBench 6 rating: Superior Overall design: Very Good Graphics: Superior 	<ul style="list-style-type: none"> 4.7GHz Core i7-2600K 8GB RAM; 480GB storage Nvidia GeForce GTX 590 BD-R drive
<p>► The Satyr is the perfect machine for tinkerers, mainly because of the huge, roomy case it comes in, and its excellent performance.</p>			
4  AVADirect X79 Silent Gaming PC \$3000 find.pcworld.com/72551	 SUPERIOR	<ul style="list-style-type: none"> WorldBench 6 score: 215 WorldBench 6 rating: Superior Overall design: Very Good Graphics: Superior 	<ul style="list-style-type: none"> 4.5GHz Core i7-3930K 16GB RAM; 2.2TB storage Nvidia GeForce GTX 580 BD-R drive
<p>► The Silent Gaming PC combines speed and power in a quiet package at a price that, while not cheap, is reasonable for what it delivers.</p>			
5  Polywell Ignition X7900i-3960 \$4599 NEW find.pcworld.com/72747	 VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 206 WorldBench 6 rating: Superior Overall design: Very Good Graphics: Superior 	<ul style="list-style-type: none"> 4.5GHz Core i7-3960K 32GB RAM; 3.2TB storage Nvidia GeForce GTX 590 (two) BD-R, DVD-RW drives
<p>► The Polywell Ignition X7900i-3960 comes packed with every performance PC lover's dream parts, but it carries a rather steep price.</p>			
6  V3 Salvo 3D \$1149 NEW BEST BUY find.pcworld.com/72792	 VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 169 WorldBench 6 rating: Good Overall design: Very Good Graphics: Superior 	<ul style="list-style-type: none"> 3.3GHz Core i5-2500K 8GB RAM; 1TB storage Nvidia GeForce GTX 560 TI (two) DVD-RW drive
<p>► The V3 Gaming PC delivers strong performance at an attractive price, making for a solid value—and it earns this month's Best Buy.</p>			
7  HP HPE Phoenix h9 \$2899 NEW find.pcworld.com/72786	 VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 186 WorldBench 6 rating: Very Good Overall design: Good Graphics: Superior 	<ul style="list-style-type: none"> 4.5GHz Core i7-3960K 16GB RAM; 600GB storage Nvidia GeForce GTX 580 Blu-ray Disc drive
<p>► Performance machines aren't usually known for their slim, svelte towers, but the HPE Phoenix h9 packs a lot of punch in a very small case.</p>			
8  Alienware X51 \$999 NEW find.pcworld.com/72659	 VERY GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 147 WorldBench 6 rating: Fair Overall design: Superior Graphics: Good 	<ul style="list-style-type: none"> 3GHz Core i5-2320 8GB RAM; 1TB storage Nvidia GeForce GTX 555 DVD-RW drive
<p>► The Alienware X51 proves that big things can come in small packages, offering excellent gaming performance in a slim chassis.</p>			
9  iBuyPower Gamer Paladin HS11 \$999 find.pcworld.com/72553	 GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 161 WorldBench 6 rating: Good Overall design: Fair Graphics: Very Good 	<ul style="list-style-type: none"> 3.3GHz Core i5-2500K 8GB RAM; 1TB storage Nvidia GeForce GTX 570 DVD-RW drive
<p>► We love this performance desktop's price and speeds; its lack of a Blu-ray player, however, is going to leave movie buffs out in the cold.</p>			
10  Polywell 990FX-8150 \$1699 NEW find.pcworld.com/72748	 GOOD	<ul style="list-style-type: none"> WorldBench 6 score: 135 WorldBench 6 rating: Fair Overall design: Good Graphics: Very Good 	<ul style="list-style-type: none"> 4.5GHz AMD FX-8150 8GB RAM; 600GB storage AMD Radeon HD 6950 Blu-ray Disc drive
<p>► Although it's fairly inexpensive for what it offers, the Polywell 990FX-8150 has a tough time standing out in a crowded category.</p>			

CHART NOTES: This chart covers the best desktops in all categories. Ratings are as of 3/5/11. BD-R drives are Blu-ray writers.



MORE ONLINE Visit find.pcworld.com/72785 for all our desktop charts, with in-depth reviews, full test results, and detailed specs.

Samsung Galaxy Note: Impressive, but Not for All

THE SAMSUNG GALAXY Note (\$300 with a two-year contract), a 5.3-inch phone with a stylus-like pen, runs exclusively on AT&T's 4G LTE network. Its "S Pen" works quite well with the user interface, but I wish that the device had more apps for the pen.

Tablet or Phone?

The 5.3-inch display puts the Note in an interesting spot between a phone and a tablet. It is light enough, but I found it a bit too wide for my hands. It measures 5.78 by 3.27 by 0.38 inches, and weighs 6.28 ounces.

The Note has the typical touch-sensitive navigation buttons below the display, including Menu, Home, Back, Search, plus a volume rocker and a power button. On the bottom is a slot for the S Pen.

The Galaxy Note's 5.3-inch display has a 1280-by-800-pixel resolution. The technology is HD Super AMOLED. The Note handled image and text rendering well; text and images were both sharp and clear.

But as on many AMOLED displays, colors were oversaturated, skin tones looked ruddy, and whites had a slight yellowish tint. Still, oversaturation isn't always a bad thing: Colors on the Note looked rich and bright, and blacks were deep.

The Galaxy Note includes a Wacom-made S Pen for

note-taking and drawing.

Wacom pens recognize both right-handed and left-handed users, and the S Pen also mimics the act of physically taking notes: The harder you

press the pen on the Note's display, the thicker and bolder your lines will be.

button on the pen and then double-tap the display. You can also take screenshots, simply by pressing and holding the pen to whatever item you want to cap-

and slideshow presentations. You'll find AT&T- and Samsung-added apps, too.

Performance

Powering the Galaxy Note is a 1.5GHz dual-core Qualcomm processor. I tested a few graphics-heavy games on the device; all of them ran smoothly, and they looked terrific on the Note's large display. Video (up to 1080p) also played flawlessly.

I ran the FCC-approved Ookla app to test the Galaxy Note's data speeds over AT&T LTE in San Francisco.

Average download speed was 24.64 megabits per second, and average upload speed was 8.78 mbps—both ridiculously fast.

Call quality was good over AT&T's network. Friends I

called reported that my voice sounded clear and natural. I couldn't detect any distortion or static on my end.

The Galaxy Note lasted for a full day of heavy testing before I had to recharge it.

The 8-megapixel camera snapped good pictures, indoors and out, but the phone's dimensions make it a little awkward to use.

—Ginny Mies

THE GALAXY Note comes with an S Pen stylus.



press the pen on the Note's display, the thicker and bolder your lines will be.

Apps and the Pen

The Note runs the latest version of Android 2.3.6 (Gingerbread), with a version of the TouchWiz interface similar to the one on Samsung's Galaxy S II phones. The Note also has built-in software and special gestures for the pen.

One handy app, called S Memo Lite, lets you jot down notes from pretty much anywhere within the phone. To pull up S Memo Lite, you hold down the

pen on the Note's display, the thicker and bolder your lines will be.

ture. Your shot then opens in a simple photo-editing app that lets you crop the image. Writing on the Galaxy Note takes some getting used to. But I liked being able to jot down ideas and reminders. And the keyboard has a pen mode that will convert your handwriting into text. I thought it did a pretty good job of conversion, overall.

The current selection of pen-friendly apps is a bit anemic. Right now, the included apps for pen mode are Polaris Office, S Memo, and a game called Crayon Physics. Polaris Office lets you create documents, spreadsheets,

★★★★☆ VERY GOOD

Galaxy Note | Samsung

Smartphone has a large display, but stylus pen has too few apps. List: \$300 (with 2-year contract) find.pcworld.com/72753

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THE GALAXY ATTAIN 4G is a budget-friendly LTE phone.

Samsung Galaxy Attain: No Contract

THE SAMSUNG Galaxy Attain 4G is an Android 2.3 smartphone that runs on MetroPCS's 4G LTE network. At \$250 without a contract, it is one of the most budget-friendly LTE phones available. But it has too much adware.

The Attain has a 3.5-inch, 320-by-480-pixel QVGA display.

★★★★ GOOD

Galaxy Attain 4G | Samsung

Despite its drawbacks, this is one of the better MetroPCS phones.

List: \$250 (no contract)

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play. In my tests, the screen displayed colors decently, though some graphic elements looked blurry. Text was readable, but the small screen made texting difficult in portrait orientation.

At 4.57 by 2.38 by 0.46 inches, the Attain is one of the smaller Android phones I've seen; it's easy to hold and nicely fits into pockets.

The Attain's photo and video quality was so-so.

Samsung has replaced the standard soft-touch navigation buttons with physical ones. The phone also has a

power button, a volume rocker, and a camera button.

Running on a 1GHz single-core Samsung Hummingbird processor and 512MB of RAM, the Attain feels a bit dated compared to all the dual-core phones coming out, but I didn't notice much lag.

The Attain lasted about 9 hours on one charge. Overall, call quality was usable.

Even over LTE, download and upload speeds were mediocre. (MetroPCS does not approach AT&T's and Verizon's LTE networks.)

—Armando Rodriguez

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Pantech Burst: Fast, Affordable Phone

THE PANTECH BURST (\$50 with a two-year AT&T contract) has a low price tag, high-end specs, and silky-smooth performance; but its camera is below average, with slow shutter speed.

The Burst is the first dual-core phone from Pantech, and it's the company's first

AT&T LTE-friendly phone.

Measuring 5.0 by 2.5 by 0.45 inches, it fits easily into a pocket or bag; its weight is a manageable 4.32 ounces.

With a 480-by-800-pixel resolution, the 4-inch Super AMOLED display isn't as sharp as those on other phones we've reviewed recently. Text looks slightly fuzzy, and colors are a little washed out. But it's fine for casual gaming, browsing, or watching YouTube videos.

The Burst runs Android 2.3.5 and carries AT&T-added apps, plus others such

as Amazon Kindle, Twitter, and YP (Yellow Pages).

In the FCC-approved Ookla Speedtest app, the Burst posted an average upload speed of 10.48 megabits per second and an average download speed of 16 mbps—both impressive.

Call quality over AT&T's network in San Francisco was very good. Callers sounded clear, with an ample amount of volume.

The Burst's 5-megapixel camera may be the phone's biggest weakness, and the camcorder, which captures



THE PANTECH BURST phone has some high-end specs.

video at 720p, isn't much better. Fortunately, these are the only major shortcomings of the Pantech Burst.

—Ginny Mies

★★★★ VERY GOOD

Burst | Pantech

As an inexpensive LTE phone, the Burst is an excellent option.

List: \$50 (with 2-year contract)

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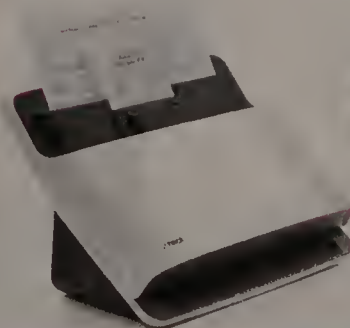
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SafeSync Does Cross-Platform Backups, File Access

I SOMETIMES HAVE trouble finding the documents and data I need, wondering if I last viewed that video on my phone, or if I saved that spreadsheet to my laptop. I also need to back everything up, keeping all of my data secure in case a device gets lost or malfunctions.

Trend Micro's SafeSync makes backing up my data and accessing it across multiple devices a breeze.

SafeSync is both a downloadable app and a cloud-based service. You sign up for an account and download the desktop client to as many as three PCs. SafeSync also offers a mobile client, for iOS and Android, that you can install on as many mobile devices as you want.

Once installed, the desktop client creates a SafeSync folder on your PC, where you can store any type of file.

Files automatically sync to your SafeSync account, which is accessible from any Web-connected device.

SafeSync makes sharing files easy, by creating secure links that you can send, and it lets you post content to sites like Facebook and Twitter.

I also prefer its backup and Web-based storage features to those of other cloud services such as Box.net.

SafeSync starts at \$40 per year for 20GB of storage and goes up to \$150 per year for 100GB of storage.

—Liane Cassavoy

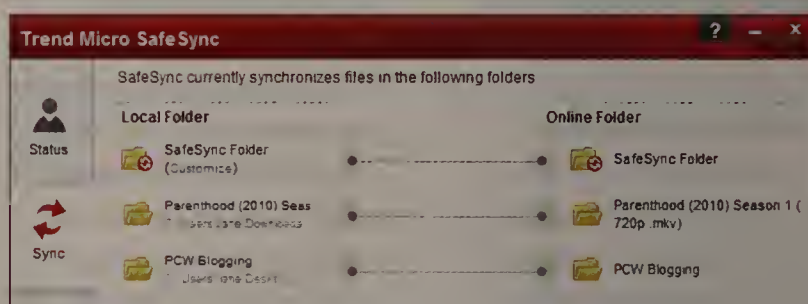
★★★★★ VERY GOOD

SafeSync | Trend Micro

Utility simplifies accessing files across multiple devices.

List: \$40 per year for 20GB


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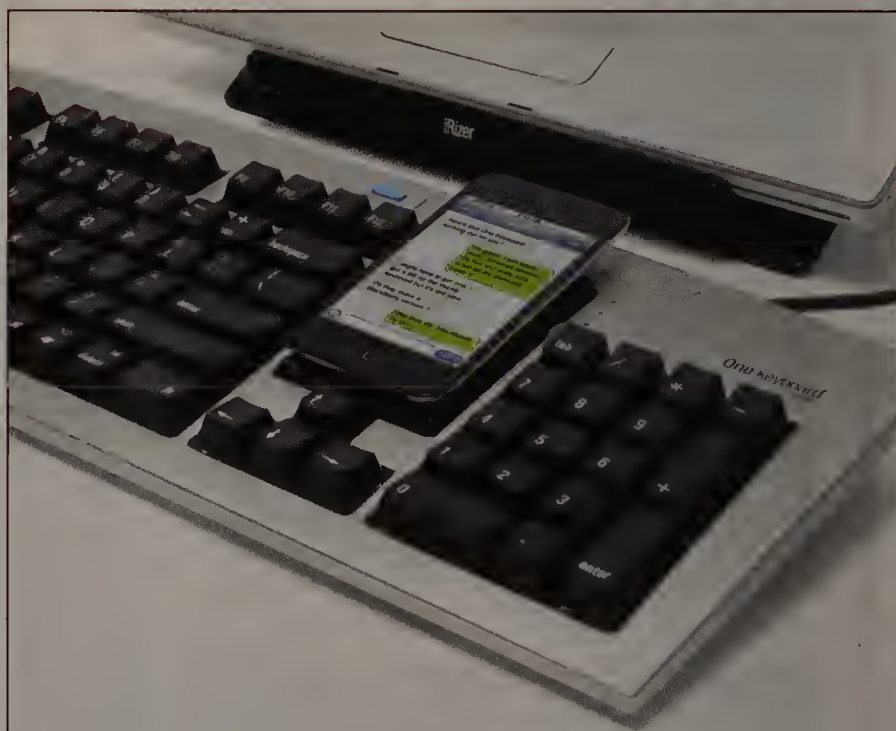


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MOST PEOPLE USE their Web browsers to download files, but a browser isn't

always the best tool for this purpose. For downloading a YouTube video or a very large file, an external download manager might be better. JDownloader is one such utility, and since it is Java-based, it works across Windows, Mac, and Linux.

A word of caution: To install JDownloader, use the installer that vendor AppWork created for *PCWorld*; this installer is

part of the download (see the link in the box). The normal installer can lead to an off-putting user experience.

JDownloader can be used in the same variety of ways as any other general-purpose download manager, and it

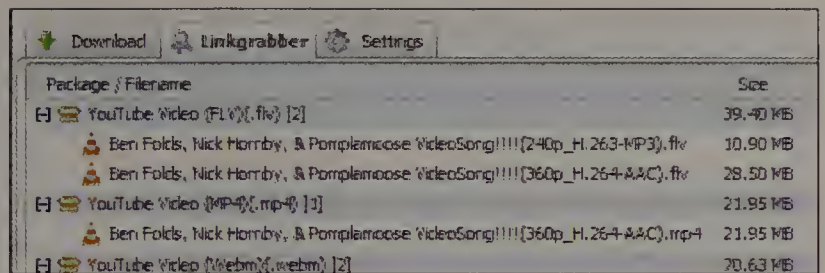
★★★★★ **VERY GOOD**

JDownloader | AppWork

Utility is one of the best download managers available.

Free

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JDOWNLOADER makes YouTube downloads a simple matter.

supports dozens of file hosts such as RapidShare. It can monitor the clipboard and parse any URL that you copy into it to see whether it contains files that could be downloaded. Feed it a YouTube link, and you can download the video.

The tool has a built-in extension system, and you can install extensions from within JDownloader itself. Extensions are available for unzipping downloads automatically, scheduling downloads to begin at certain times, and more.

JDownloader is one of the best download managers around today, at a price that can't be beat. If you like it, consider donating to the developer—and praise the *PCWorld* installer.

—Erez Zukerman

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12 PM

1 PM

2 PM

3 PM

4 PM

5 PM

6 PM

48°

Cloudy
Feels like 50°
AccuWeather

TUE 28



53°/46°
Partly Cloudy
87%

WED 29



53°/45°
Rain
80%

THU 1



54°/45°
Showers
65%

FRI 2



58°/43°
Mostly Sunny
3%

SAT 3



62°/45°
Mostly Sunny
4%

SUN 4



63°/47°
Partly Cloudy
13%



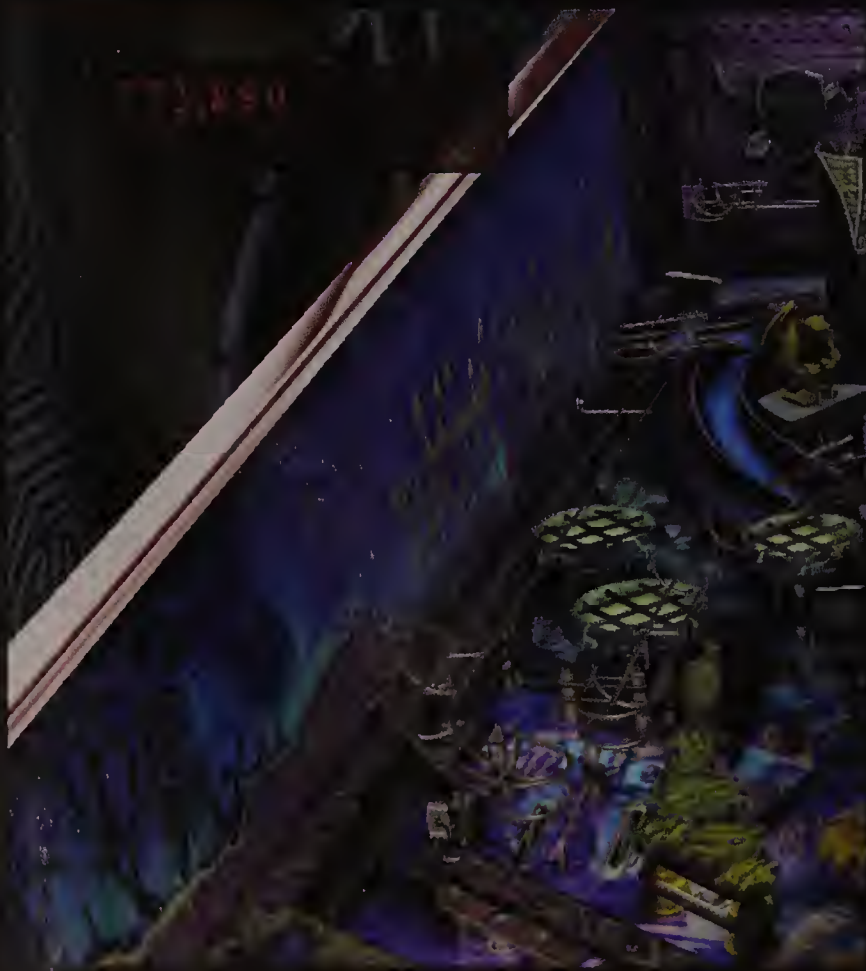
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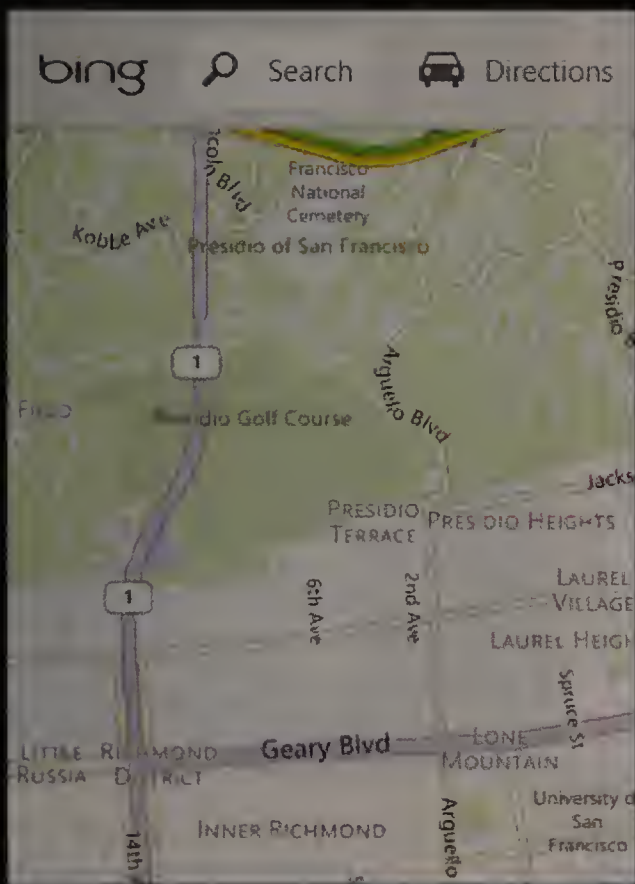


video

tv marketplace

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Windows 8: WILL YOU LOVE IT OR HATE IT?

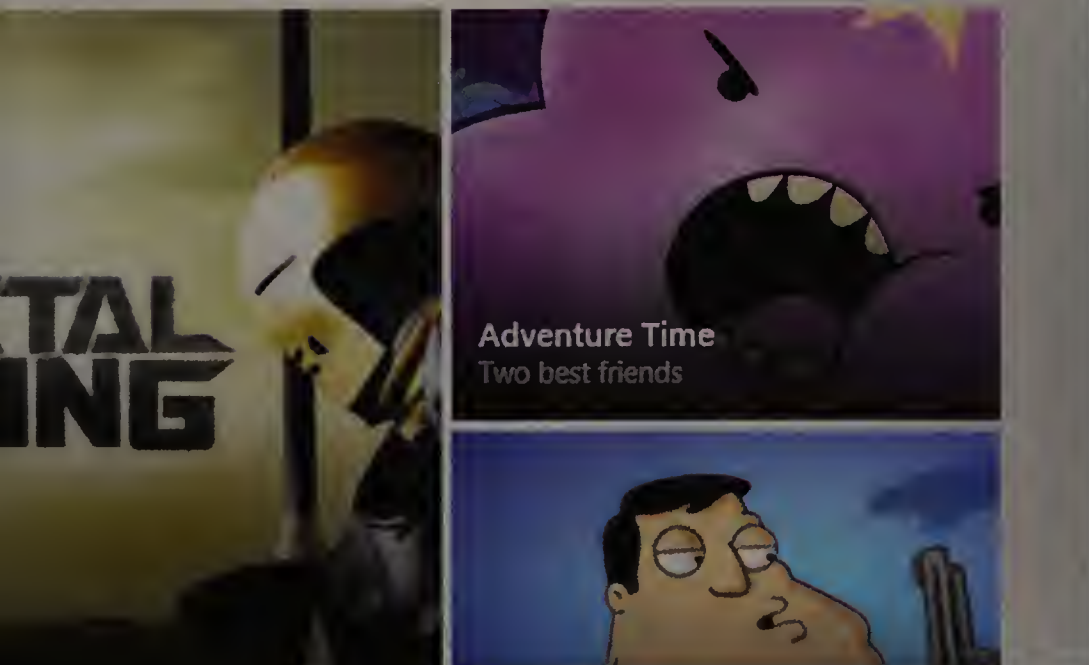
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With the release of the Windows 8 Consumer Preview, Microsoft is taking a big risk as it reengineers its OS for the tablet era. There's plenty to like here, but traditional PC users may just say no. »

BY JASON CROSS, NATE RALPH, AND EDWARD N. ALBRO

THE BEST AND WORST THING ABOUT WINDOWS 8 is that it's different—unmistakably, inescapably different. Microsoft obviously believes that the dramatic changes it has introduced in Windows 8 are necessary to keep its flagship operating

system relevant in a world increasingly dominated by tablets, phones, touchscreens, and connected cloud services. For users, change can be great, but it can also mean relearning how to do things you've done for years.

Judging from Microsoft's public Windows 8 Consumer Preview—the first release of the new OS that is meant to be run by millions of regular PC users—Windows 8 still needs plenty of polish before it goes final (likely later this year), but this release is far more complete than last year's Windows 8 Developer Preview.

For one thing, the Start screen, with its Metro interface, is more responsive and easier to use with a keyboard and mouse. Major features absent from the Developer Preview, such as the People and Photos hubs, along with the Video and Music stores, are now in place. The Store, though sparsely populated, is functional. In short, the Consumer Preview offers a reasonable (albeit rough) representation of

how the shipping version of Windows 8 will function. The final release will be greatly refined, but all of the major pieces of the OS are in place now.

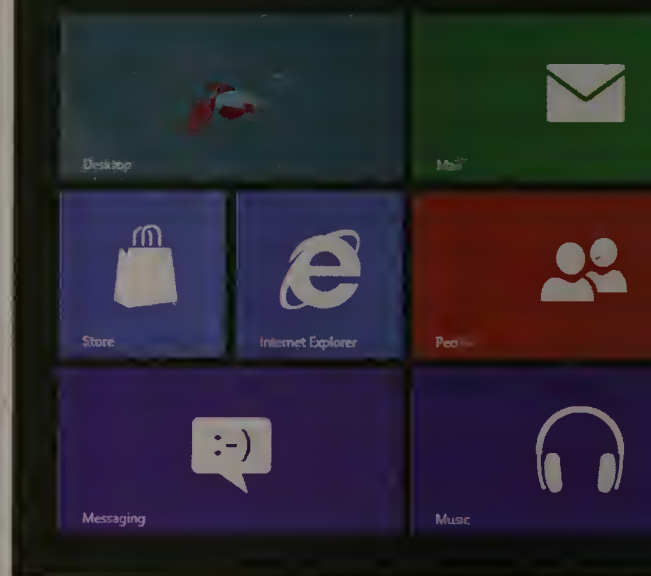
A Break With the Past

Windows 8 introduces the most basic changes to the Windows interface since Windows 95. It includes a lock screen containing the time and date, plus notifications. When you boot into Windows, you go to a Start screen consisting of a customizable grid of tiles; the tiles launch new full-screen "Metro-style" apps, and deliver updated information from them. To go to the desktop, you must tap the Desktop tile, a keyboard shortcut, or the tile for a desktop application that you've pinned to your Start screen.

Desktop apps that run on Windows 7 should work on the Windows 8 desktop, but many details have changed. You access core Windows features with the Charms bar, which flies out from the right edge; and you switch

Start

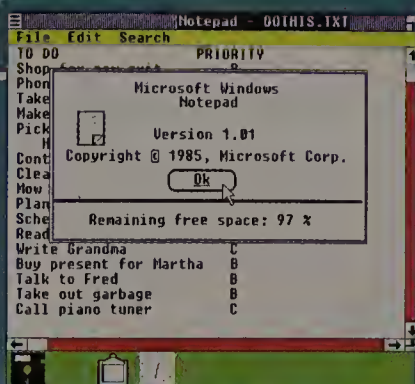
Main



between running programs with the App bar on the left edge. The Start screen replaces the Start menu. Adapting to the new OS takes some adjustment. On a touchscreen PC or a tablet, the interface works fluidly and intuitively. It handles mouse and keyboard input well, too, but differs so much from previous Windows versions that it can be frustrating at first.

If you want the same version of Windows on your tablet and PC, you'll likely welcome Microsoft's innovations. If you plan to use Windows strictly as a desktop or laptop OS, the

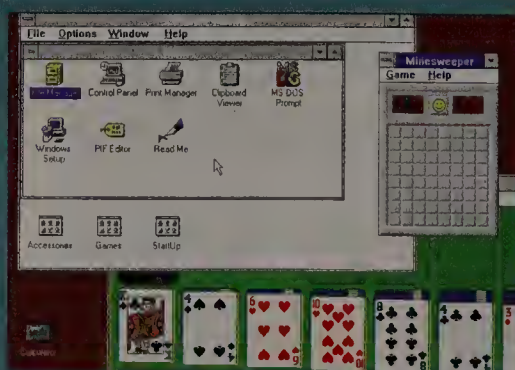
1985



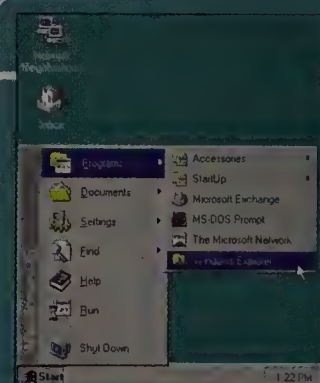
Windows 1 was primitive, with nonoverlapping windows.

1992

Windows 3.1 offered improved drag-and-drop plus multimedia.

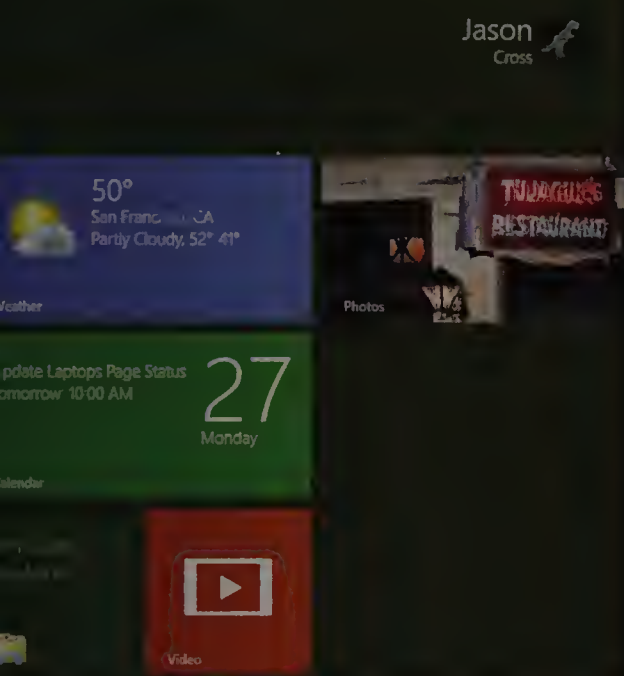


1995



Windows 95 brought the taskbar and Start menu.

Windows Timeline: Microsoft has revised its OS often over the years. Here are some highlights.



Jason Cross

Speed Tests: So Far, So Good

At this point in its development cycle, Windows 8 remains unfinished and is not fully optimized; nevertheless, the new operating system already looks pretty impressive when matched against its predecessor on performance benchmarks. We compared Windows 8 to Windows 7 on our WorldBench 7 test suite, using identical hardware configurations: an Intel Core i5-2500K processor, 8GB of RAM, a 1TB Western Digital 7200-rpm hard drive, and a GeForce GTX 560 Ti graphics card. Here are our results.

Task	Performance score
WorldBench 7 ¹	100 (Windows 7) vs 114 (Windows 8) (BETTER)
Startup time ²	56.2 (Windows 7) vs 36.8 (Windows 8) (BETTER)
Advanced Web browsing ³	18.9 (Windows 7) vs 28.6 (Windows 8) (BETTER)
Video encoding ⁴	141 (Windows 7) vs 155 (Windows 8) (BETTER)

■ Windows 7 ■ Windows 8. FOOTNOTES: ¹ Performance on WorldBench 7 benchmark test suite. Higher is better. ² Time from off to desktop, in seconds. Lower is better. ³ Frames per second on WebVizBench benchmark. Higher is better. ⁴ High-definition video conversion, in seconds. Lower is better.

new design may leave you wondering how the changes benefit you.

Microsoft needs to listen to feedback from users and make some changes; our advice is to give desktop users a way to avoid the Metro interface as much as possible if they don't like it. But the success of Windows 8 also depends on developers' creating compelling Metro apps, and manufacturers' producing attractive, effective touch-based hardware.

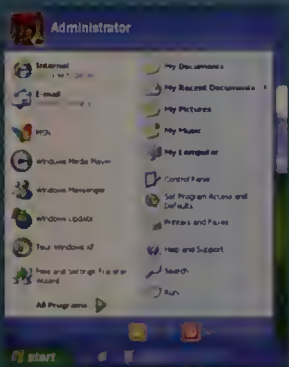
To try the Windows 8 Consumer Preview, download it from Microsoft at find.pcworld.com/72801.

“I hate the new user interface and the lack of a Start button. Windows 8 will be the new Windows Vista.”

—SURVEY RESPONDENT

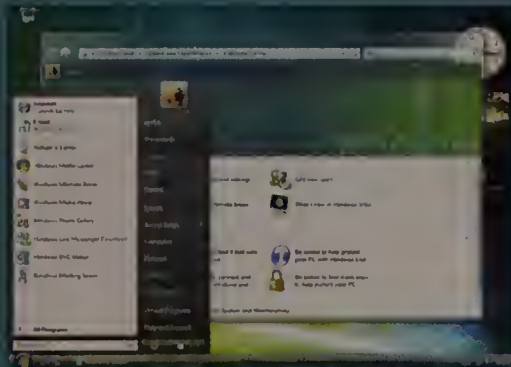
2001

Windows XP achieved excellent stability thanks to its NT origins.

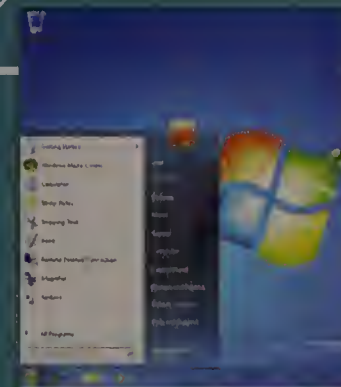


2007

Windows Vista added the translucent Aero interface.



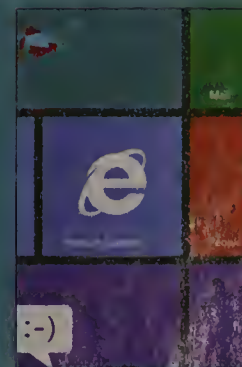
2009



Windows 7 reduced system drag, with strong stability.

2012

Windows 8 (beta) ➔



“It took me 10 minutes just to figure out how to turn the damn computer off.”
—SURVEY RESPONDENT

Metro: Microsoft's Big Gamble

The most striking and controversial change in Windows 8 is its new Metro interface—the brightly colored tiles that serve both as shortcuts to programs and as live widgets reporting data from the programs. Most people will base their opinion of Windows 8 on what they think of Metro. And though the interface has many appealing features, some aspects may drive you crazy.

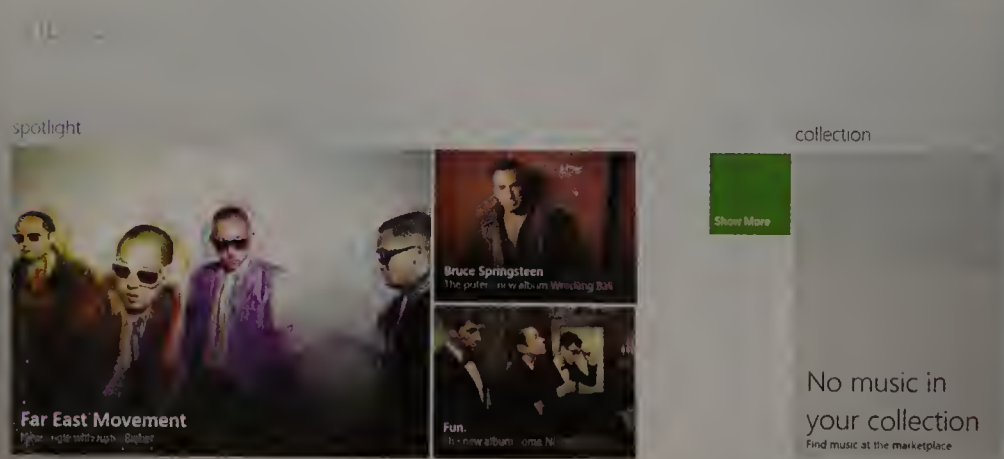
If you use Windows 8 on a touch device, you'll find that using Metro is a great way to interact with your device. The live tiles show dynamic content, such as text from a recent email message or reminders of an upcoming event, and they simplify the task of navigating through your apps.

One plus for users of traditional PCs is that Microsoft has replaced the old OS's small, cluttered Start menu with the better-looking Metro Start screen. With the Start screen, you can easily group and shuffle applications, and you can search simply by typing anywhere on the screen.

The odd juxtaposition of Metro with the traditional desktop interface frequently feels as though Microsoft just awkwardly bolted together two different operating systems. Applications such as Internet Explorer, for instance, look and operate very differently in Metro and on the desktop.

Optimized for tablets, Metro apps are less efficient on a desktop. They display at full-screen by default, and most don't work well at smaller sizes. The amount of information on a single screen is usually skimpy, so you'll have to do lots of horizontal scrolling to accomplish some simple tasks.

If you don't like Metro—in the Consumer Preview version of Windows 8, at least—you can't just ignore it. You must begin in the Metro Start screen and return to it regularly for tasks such as launching programs.



Six Things We Love

1 The Metro interface on touch-screens: In the right setting, the new interface is fast, fluid, attractive, and very easy to use. It makes iOS look like a bunch of old icons and Android tablets look like a collection of fiddly, mismatched widgets.

2 Internet Explorer 10: IE 10 is shaping up to be an outstanding browser. No, really! It has much better standards compliance than its predecessor did, as well as tons of HTML 5 support and superior speed.

3 Syncing: Sign in to your account on another PC, and lots of your tools and content—your Metro apps, settings, desktop preferences, taskbar setup, browser bookmarks, and more—magically sync up over the Net.

4 Refresh/reset: You can restore your PC to “like new” condition in a matter of minutes, without having to reinstall from scratch. If you play the role of tech support staff for your family, you'll love it.

5 Faster startup: Windows 8's hybrid boot technology got the system up and running significantly faster in our testing.

6 Networking: Windows 8 connects faster, seamlessly integrates mobile networks and Wi-Fi, and lets you track mobile network usage. It even has a convenient airplane mode.

Six Things We Hate

1 Desktop app icons on the Start screen: Ugly icons in empty squares, links to various uninstallers—it's a mess. Microsoft needs to clean up the method it uses to add links to desktop apps on the Start screen.

2 Multimonitor misbehavior: When you click the desktop on monitor 2, the Metro screen over on monitor 1 disappears and the Start screen on monitor 1 flips to the previous Metro app, preventing you from using the live tiles to their full potential. The solution is simple: Clicking anywhere on one monitor should not produce any change in what the other monitor displays.

3 Metro apps: If the Metro interface is to have any value, the apps must be great, but most of the apps available in the Consumer Preview are bad.

4 Horizontal scrolling: For the most part, Metro apps are organized left-to-right with lots of white space, which feels awkward on a traditional PC.

5 Unavoidable encounters with Metro: If you mainly use Windows on your desktop, you should be able to go straight to the traditional desktop mode and stay there. But Windows 8 requires you to start in Metro and to return to that interface often.

6 Full-screen apps in Metro: Sometimes you need to see two windows at once, but apps in Metro open at full-screen by default. You can shrink them to a vertical pane, but that option doesn't work for most programs.

Win 8: The Readers Speak Out

Few people have a neutral view of Metro. Most either love the touch-friendly interface or hate it, as we discovered in a survey of more than 2900 readers who had installed the Windows 8 Consumer Preview.

"It takes some getting used to, but once you've learned it, it is easier to use, faster, more intuitive, and easy to customize," one respondent wrote approvingly. "It's shaping up to be not only the most radically different Windows ever, but also the best."

"I hate the new user interface and the lack of a Start button," another said. "The OS feels like it was designed for the tablet with the desktop PC as a complete afterthought. Windows 8 will be the new Windows Vista."

All told, fewer than half of all respondents said that they were satisfied with Metro. The hostility toward the new interface could translate into some damaging word-of-mouth negativity toward the new OS. When we asked survey respondents if they would recommend Windows 8 to a friend, slightly more than half of them indicated that they were unlikely to endorse it.

Survey respondents generally liked Windows 8's performance. Asked to compare its speed with that of the previous OS they had used on the same device, 45 percent said the speed was the same, 40 percent said the device felt faster with Windows 8, and just 9 percent said Win 8 seemed slower.

Most survey respondents also had upbeat opinions about Internet Explorer 10 and the new version of Windows Explorer. Here are the numbers. >>

SATISFACTION WITH WINDOWS 8

FEATURE	Extremely dissatisfied	Somewhat dissatisfied	Neither	Somewhat satisfied	Extremely satisfied	Don't know
Metro interface	26%	17%	12%	21%	23%	1%
Windows app store	10%	10%	23%	23%	13%	20%
Mail, calendar, and people apps	10%	15%	20%	24%	17%	15%
Internet Explorer	8%	12%	22%	29%	24%	6%
Windows Explorer	6%	8%	23%	30%	30%	4%
Restart/restore feature	7%	7%	15%	17%	26%	29%
Overall satisfaction	15%	19%	13%	28%	24%	1%

CHART NOTE: The two most common responses from survey participants on each measure are marked in bold. Source: Survey of 2963 PCWorld readers who had reported installing the Windows 8 Consumer Preview.

WOULD YOU RECOMMEND WINDOWS 8?

MEASURE	1 = Highly unlikely	2	3	4	5	6	7	8	9	10 = Highly likely
Likelihood of recommending the OS	21%	6%	8%	6%	9%	7%	9%	11%	6%	17%

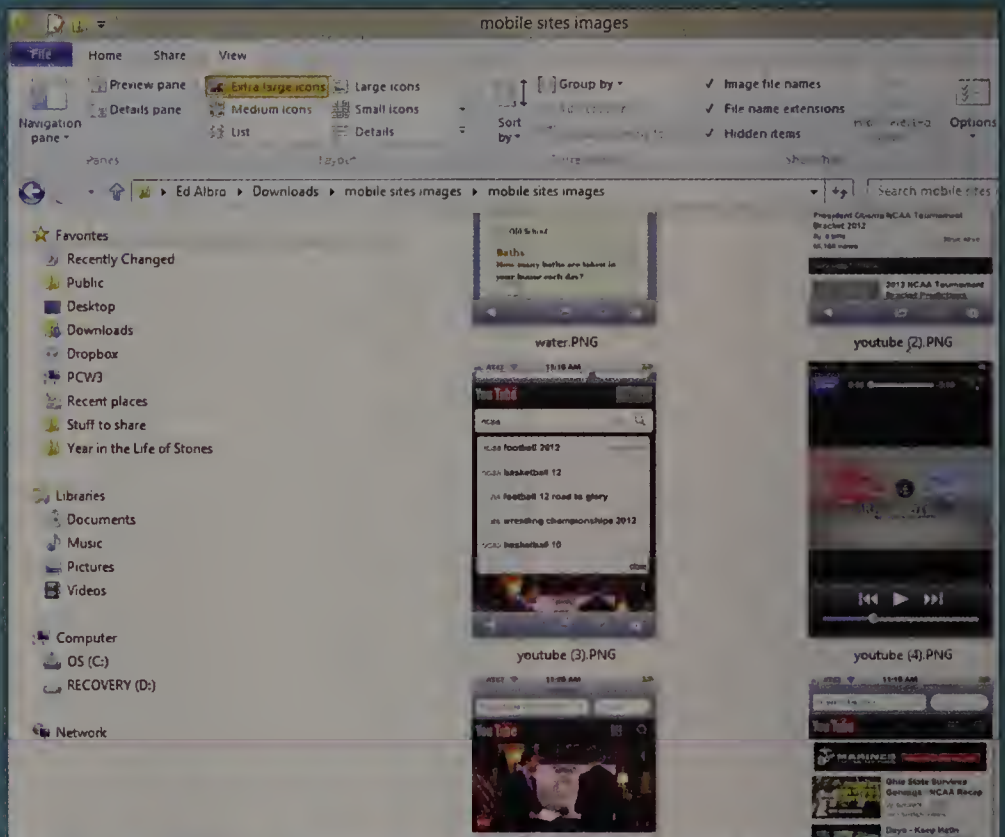
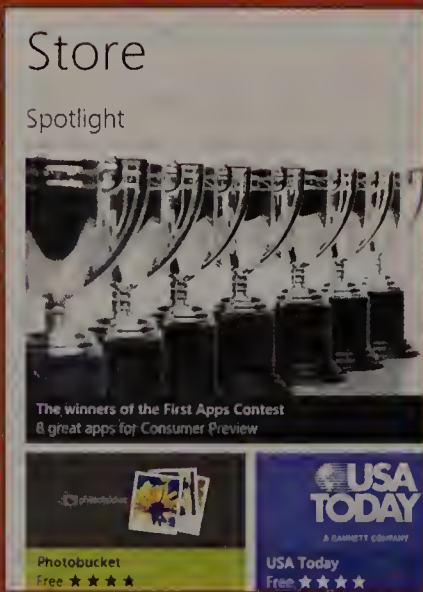
CHART NOTE: The two most common responses from survey participants on this measure are marked in bold. Source: Survey of 2963 PCWorld readers who had reported installing the Windows 8 Consumer Preview.



Windows' New Store

You can't sell a device these days unless it has an integrated app store. The phenomenon isn't limited to tablets and phones, either: Apple built an App Store into OS X Lion. And now Microsoft is doing the same with Windows 8. The Store will offer full-screen Metro-style apps for your Start screen. Purchases are tied to your Microsoft account.

Many free apps will be available, too, including all of the apps in the Consumer Preview. When the Store opens for business, paid apps will range from \$1.49 to \$999. Developers can use in-app purchases and subscription models; if they don't want Microsoft to handle payments through the Store, they can set up their own payment methods. The initial revenue split on Store sales is slated to be 70 percent for the developer and 30 percent for Microsoft, similar to Apple's cut from its App Store; but when an app's total revenue hits \$25,000, Microsoft's cut falls to 20 percent.



A Look Under the Hood

Windows 8 includes many changes that aren't touchscreen-related. The OS tends to demand less memory and processor effort than Windows 7 does. Networking gains faster Wi-Fi connections and smarter Wi-Fi, ethernet, and cellular wireless network management. A new generic class printer driver may simplify printer setup. Explorer (shown here) upgrades file management with interface tweaks, including buttons to move up one level or to show file properties, a dramatically improved file move/copy window, and a ribbon interface that automatically gets out of the way when you aren't using it.

In multiple-monitor setups, taskbar icons can follow apps to the monitor that their window appears on, and backgrounds can span all of your displays. Changes to DirectX and the Windows graphics driver model enhance performance and make debugging easier for developers.

Windows Defender now incorporates Microsoft Security Essentials' anti-malware features. Standard PC apps won't automatically migrate to other systems when you log in to them, but desktop settings and preferences will.

“It takes some getting used to, but once you've learned it, it is easier to use, faster... and easy to customize.”
—SURVEY RESPONDENT



An OS Designed for a Tablet

Manufacturers continue to introduce tablets at a dizzying rate, suggesting that there's room for a viable competitor to the Apple iPad, and that so far Android has not cut it. (For an analysis of how current tablets stack up, see page 13.) That leaves the door wide open for Windows 8 tablets. But as with everything else about the new operating system, the success of Windows 8 tablets hinges on consumer buy-in to the dramatic OS redesign.

Windows 8 has the potential to provide uniformity across devices. By design, it behaves similarly regardless

of the device you use it on. The idea of a tablet that looks and functions basically the same as a laptop or desktop has a lot of appeal; even better is the prospect of owning software that scales across all platforms, so you can use it on whatever device you like.

Of course, some conditions apply: if Microsoft gets critical mass on app development; if Microsoft provides tools that businesses need to perform essential tasks and manage devices; if Windows tablets can compete head-to-head with Apple's iPad on price. Those "ifs" likely won't be resolved

until the full Windows 8 launch occurs.

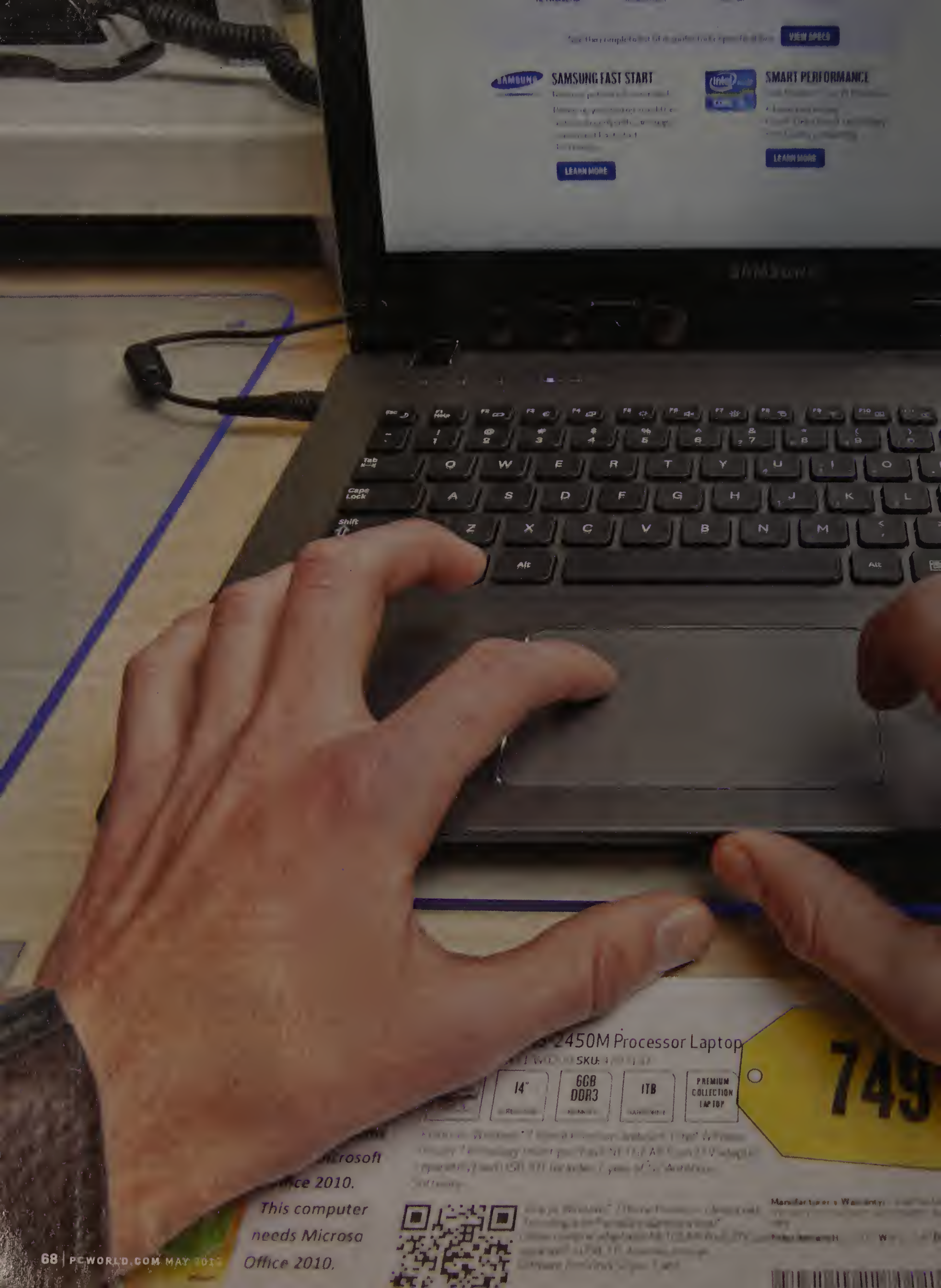
The greatest advantage Windows 8 tablets may enjoy relates to the interoperability of Windows 8 with existing software. The 90 million-plus users of Windows-based systems already use a lot of Windows software. The question is whether those apps will work well—or at all—on Windows 8 tablets.

The issue is twofold. First, existing apps are not optimized for touch, and as a result menus may be difficult to navigate by finger. Second, and even more fundamentally, Windows 8 is the first Windows OS to run on ARM system-on-chip platforms, with support in place for chips from Nvidia, Qualcomm, and Texas Instruments.

But since ARM is a completely different architecture from the one used in the AMD/Intel x86/x64 universe, existing Windows software won't run on ARM-based tablets. Microsoft has stated that ARM tablets will not have a desktop mode, nor will they offer any emulation to handle existing apps. Consequently, ARM tablets—which are widely expected to be lighter and less expensive than Intel- or AMD-based tablets—will work only with new Metro-style apps.

Those limitations could be a recipe for disaster, if they contribute to consumer confusion and discourage businesses from jumping on the Windows tablet bandwagon—unless the hardware has Intel or AMD inside.

In the macro view, Microsoft has every reason to extend Windows 8 to its other platforms to effect a grand unification of interfaces as well as of media and app stores, but Microsoft isn't talking about that as of this writing. If that were to happen, consumers might be the beneficiaries of a well-implemented strategy, and Microsoft might rapidly gain ground in the phone and tablet markets. ●



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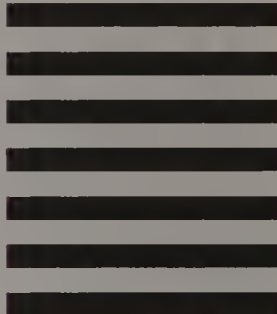
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Note that these tests provide only part of the information that will go into your buying decision. They're best used to choose from several devices that you've already determined have the features you seek.

Also remember that how many tests you'll be able to do will vary from store to store. Depending on the outlet, you'll find display devices that are fully functioning and ready to use (and test), or you'll find a room full of gadgets that are largely disabled or not turned on at all. Our advice is to shop for tech in stores that allow for a hands-on buying decision. >>

BY PCWORLD STAFF

PHOTOGRAPHS BY ROBERT CARDIN

FIELD RESEARCH BY ALBERT FIGUEROA

Phones

WHAT YOU'LL NEED:

- 🕒 Stopwatch or stopwatch app
- 🎧 Headphones



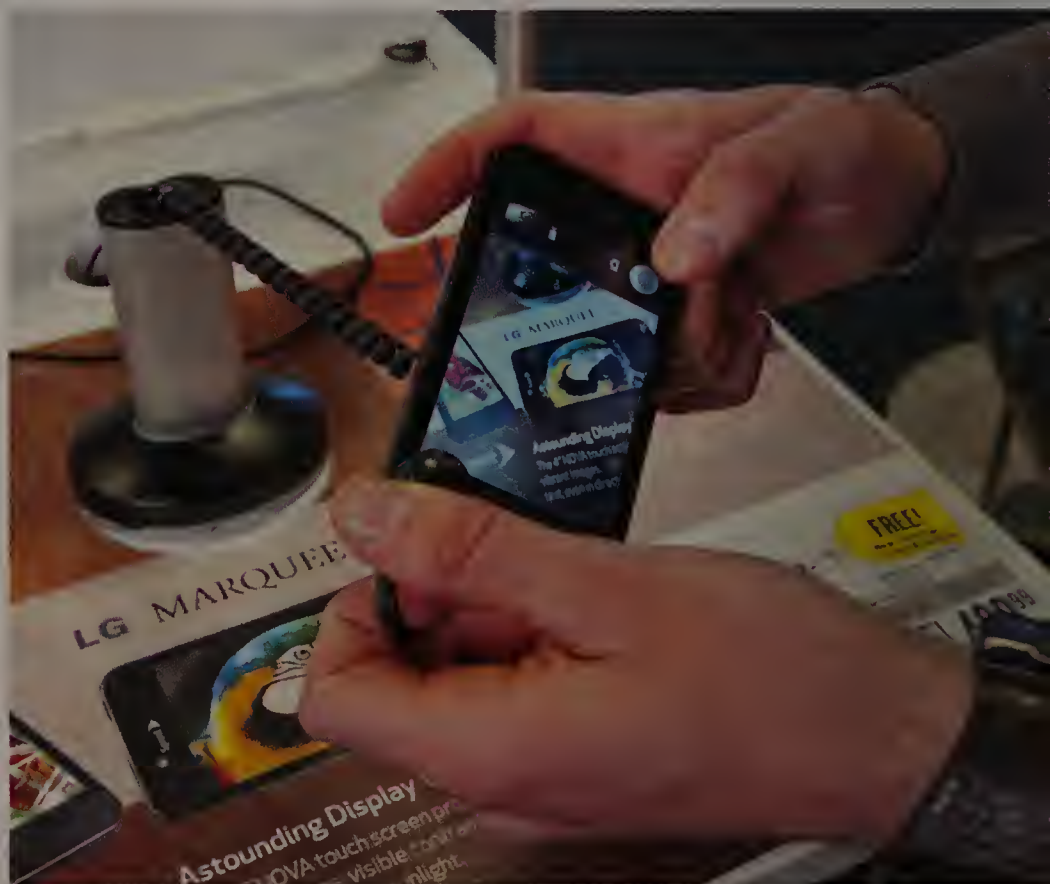
Display Many phones don't come with sample images in the gallery, but you can preview the various wallpapers that are usually in the 'Personalize' section of the settings.

Note the sharpness and colorfulness of the phone's display, as well as the deepness of the darks and the brightness of the lights.

Open a text message or a Web page, and look at the sharpness and contrast of the text.



Touchscreen Open the text messaging app and use the touchscreen keyboard to type a few sentences. Note the responsiveness of the keyboard, and how many errors you make after typing continuously for 15 seconds (keep track of time using a stopwatch app on your existing phone, or bring a stopwatch). Also, how much pressure does it take to register a keystroke?



Camera Shoot a few photos with the camera, and review the results. Are the images sharp and colorful, but not washed out or oversaturated with color?

Shoot a bit of video, and view it on the phone. Is the video sharp, well lit, and distortion-free?

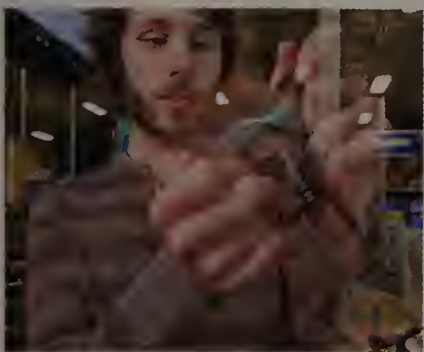
Processor

If the phone has a sample video, launch it. If you see choppiness or jitter, the processor could be underpowered. Launch a few of the preinstalled apps; then launch the video camera function. Note the time that elapses between when you press the icon and when the app or function starts.



Design

Will the size of the phone work for you? Does it fit well in your hand? Is it light enough or heavy enough? Will it fit well in the pocket or bag where you'll store it?



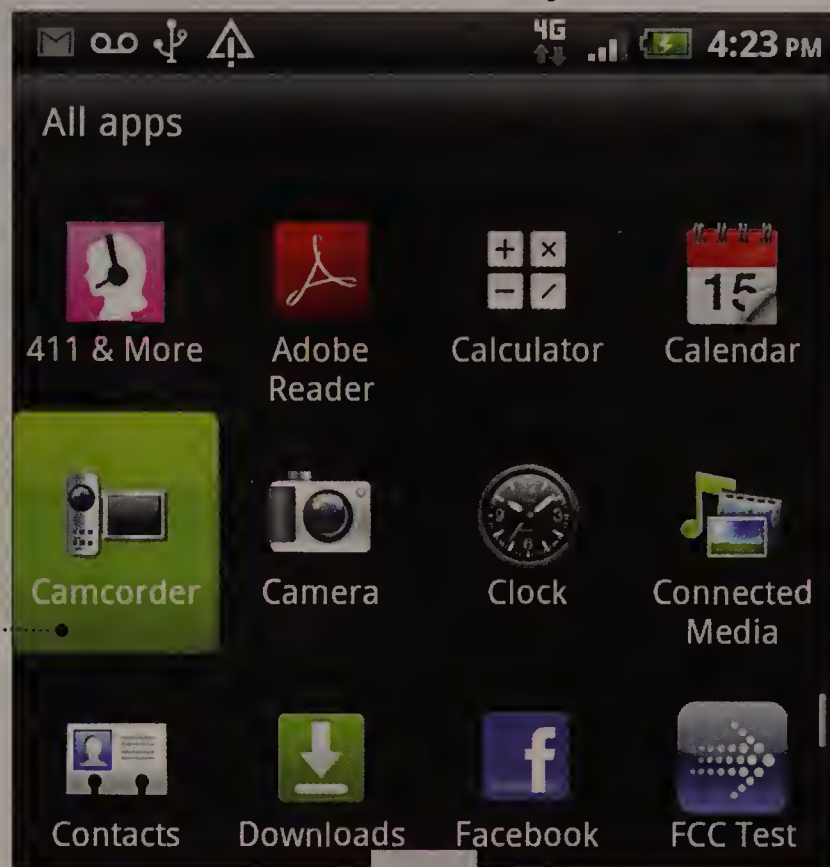
Orientation

Try typing in both the upright (portrait) and sideways (landscape) positions. Does the display switch easily between those modes? Is there a delay as the sensor figures out how you're holding the phone?

Network

Look for the 3G or 4G symbol. If you see the rounded Wi-Fi bars, you may have to disable that function in the settings.

With the phone's cellular connection on, open a couple of Web pages, and note how quickly the content loads. Go to YouTube and play a few high-def videos to test the network connection.



Sound

Find a sample audio file (or a music video), and play it using the music player app (one should be built in). Plug in your headphones. Does the phone's amplifier produce enough volume? Is the sound quality of the music good enough? >>

Laptops

WHAT YOU'LL NEED:

- 🌐 Monitor test-pattern URL
- 📄 Typing-test URL
- 🕒 Stopwatch or stopwatch app



Boot Time

Using a stopwatch (or stopwatch app), measure the time between pushing the power button and when the machine is ready.

Viewing Angle

Look at the monitor from different angles, vertically and horizontally. Do colors change, or does the screen dim?

Display Go to a website with some monitor test patterns (one is at find.pcworld.com/72749), and view the patterns while adjusting the brightness. Does the display get bright enough to use outdoors? Is it too glossy and reflective?

Keyboard Keyboards are somewhat subjective—different people (with thick or slender fingers) like different keyboards. Just make sure that you're comfortable with the feel of the one you're trying out.

Open a word processing program such as Notepad or Word, and run off a couple of paragraphs. Can you type quickly and accurately?

If the laptop is connected to the Net, you can take a free 1-minute typing test at www.typingtest.com, comparing your words-per-minute scores between computers.



App Launching Fire up whatever applications are installed, and see how quick it feels. Look for apps that are on all of the models you're considering, run them, and compare the speeds between systems. Make sure that the apps reside on the PC itself and do not rely on a wireless network.

Touchpad Test the touchpad's navigation chops by scrolling through websites and other windows. Move the cursor around, and click away; open context menus (right-click). Does it let you point and click where you want to? Does the touchpad register your palms touching it, causing the cursor to jump as you type?

Cameras

WHAT YOU'LL NEED:

- 🕒 Stopwatch or stopwatch app
- 💾 SD Card (You should bring your own SD Card in case the store's display cameras don't have enough on-board memory for images, and to help you compare images from different cameras later.)

Shutter Lag Speed

Start with the camera already on, and point it at your stopwatch. Start the stopwatch and half-press the shutter button to autofocus, and then take a photo of the stopwatch time. This will show you how long the camera takes to autofocus and snap a sharp shot of the smartphone's display, giving you a shutter lag speed that you can compare with other cameras you're looking at.



Power-On Time

Start with the camera off; then simultaneously start the stopwatch and power the camera on.

Take a photo of the stopwatch or phone screen as soon as the camera will let you.

Jot down the resulting start time, to compare against other cameras.

Automatic Stabilization

Zoom all the way in on an object, and then shake your hands gently while attempting to take a shot at full telephoto. This test is a good gauge of how well the camera's optical-stabilization system works in a worst-case scenario.

Compare that shot with a picture of the same object taken with the camera resting on a flat surface, such as the store display stand. >>






Autofocus: Short and Long Zoom

For long zooms, pick a spot as far away as possible, and zoom in slowly. Does the camera's autofocus search in and out at the midrange and at full telephoto? For close-ups, point the camera at some text. Starting with the lens as close as it can get to this text, slowly move away and half-press the shutter button to attempt autofocus at slight intervals.



HDTVs

WHAT YOU'LL NEED:

-  DVD or thumb drive with a movie
-  Stopwatch or stopwatch app
-  Light-meter app

Source and Settings

Make sure that the HDTV models you're considering are using the highest-quality video source that they can (HDMI, typically). Also confirm that the TVs are set to display video at 1080p. (These days, nearly all new HDTVs have that capability.)

Compare the ways different sets handle the same scene, side by side. Some televisions may make a dark scene look too bright, for example, while other sets might oversaturate the colors so that everyone ends up looking a little too thoroughly tanned or even sunburned.

This video comparison is also a good opportunity to try out a TV's different preset modes, such as its movie mode, to see whether you can get a good picture out of it without paying for a professional calibrator or adjusting settings manually.



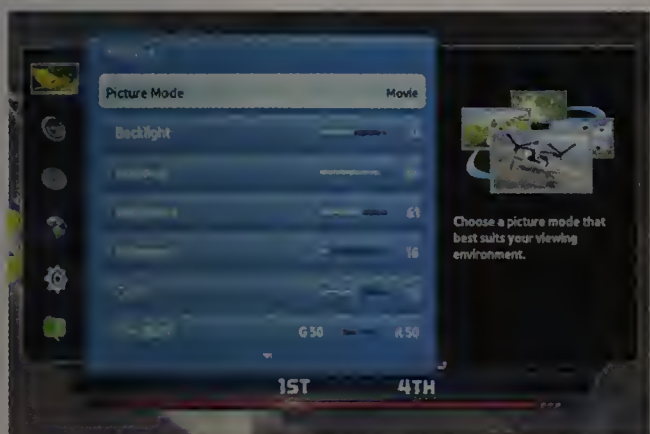
Light Levels and Plasmas

While you're shopping, keep in mind that light levels in the store may differ from those in your TV room. (Plasma sets look best in dark environments. If your TV room is brighter than the showroom, a plasma screen may not look as good once you get it home.)

If you have a smartphone, download a light-meter app that uses your phone's camera to measure ambient light levels in the room where you'll have the TV. Take another reading in the showroom, and compare the results.

ILLUSTRATIONS: CRYSTAL LEE





Mode Test Most TVs are configured to play in a special store mode that blows up the brightness. But you can change the mode to get a better idea of the TV's home-use look.

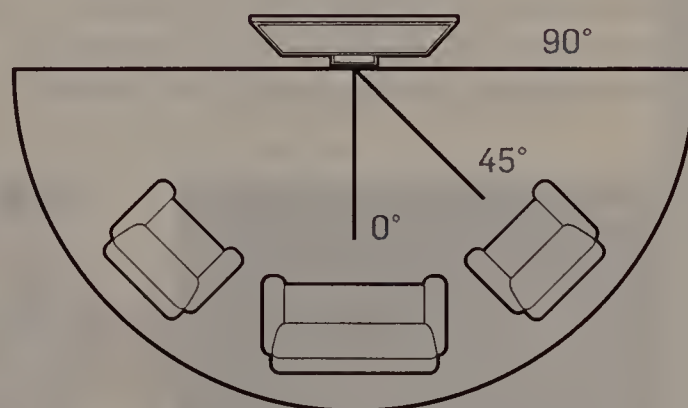
First, press the set's *Menu* button. Try changing the mode; if you can't, try to go through the first-time setup process (usually an option in the menu system), which should let you change the mode. Then choose one of the available movie modes—preferably the THX preset.



Glare Confirm whether the TV panel itself reflects too much light. If you can see your reflection on the screen while the set is on, you'll likely have a hard time watching anything, especially dark scenes, if you happen to have much light in your TV room.

Movie Test

If possible, bring a sample video that you're very familiar with—something indicative of your viewing habits, like a Blu-ray or DVD of a movie you watch frequently (or a few clips on a USB drive). Ideally, the salespeople will allow you to try your video on their array of TVs so that you can see which one makes the stuff you watch look best.



Viewing Angle

On each TV you try, pause the video and slowly walk left and right as you look at the screen, stopping when the colors start to fade or darken. This exercise will give you an idea of the model's viewing-angle range. With a 40-inch TV meant for a smallish living room, you probably need to worry only about the length of your couch; for a bigger room, buy a set that doesn't require you to sit directly in front of it. >>

Desktops

WHAT YOU'LL NEED:

- Windows Experience Index URL
- AMD graphics test URL
- Stopwatch or stopwatch app



Machine Noise To find how noisy the PC is, put your ear up to the side of the case, and listen for unusually loud sounds. If you can, listen to the fan in the rear, too. The store will probably be a noisy place, so take note of noise that's greater than the average of other PCs there.



Boot Time

Using a stopwatch (or a stopwatch app on your phone), measure the time between pushing the power button and when the machine is ready for use.

All-in-Ones Make sure the touchscreen responds well to your directions, as follows:

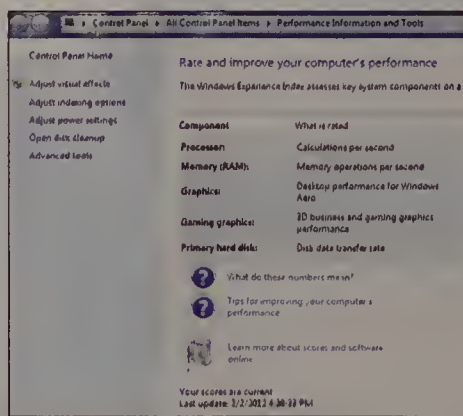
Navigate through various features of the OS. Swipe through some sample photos (found in the user folder you see after pressing *Start*). Open a browser, and navigate some Web pages.

Also, test the speakers built into the all-in-one by playing a few of Windows 7's sample music files (in the user folder), and listening to the sounds you like.



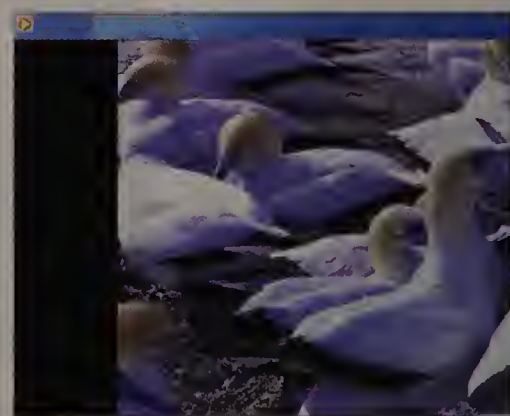
Gaming Graphics

If you want your new PC to play games, conduct a test at AMD.com to help weed out PCs with weak graphics capabilities. The test runs an advanced, graphics-intensive game, and then grades the PC's performance. If the PC is connected to the Web, you can access the test at find.pcworld.com/72752.



Components Performance

Windows 7 Home Premium has a diagnostics tool called the Windows Experience Index, which rates CPU, disk drive, memory, and graphics card performance and gives the PC an overall score. Access it from the Control Panel (under 'Performance Information and Tools').



Media Playback

Open one of the video files that's included in Windows 7. To do so, press *Start* and click the user name in the top-right corner of the menu (this may be simply the name of the store, the brand of the PC, or 'default'). Open the Videos folder, double-click a video, and look for pixelation or stuttering in playback. ●

From the editors of **PCWorld**

SUPERGUIDES



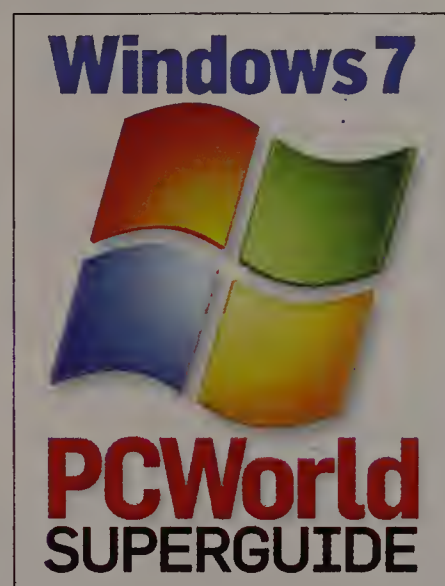
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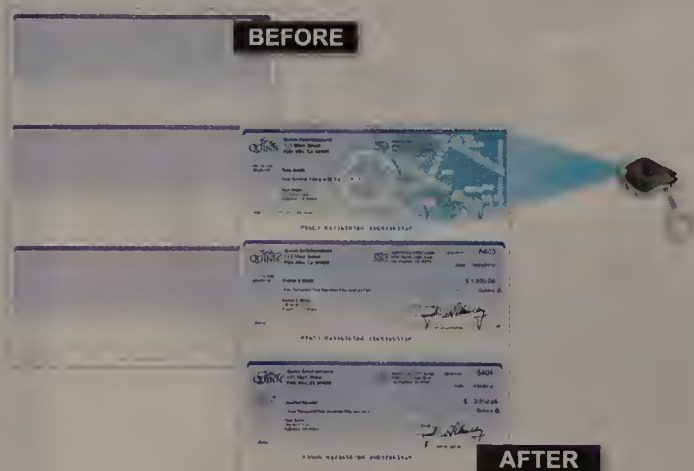


*Small Business Fraud Custom Study among Small Business Owners. Conducted for SunTrust Banks/National Small Business Association/Edelman, October 17, 2007.

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THE NEW DESKTOP

7 Great All-in-Ones

They're **zippy**, **stylish**, and just plain **practical**. Here's why your next PC probably won't be a tower.  →

BY NATE RALPH AND
SARAH JACOBSSON PUREWAL

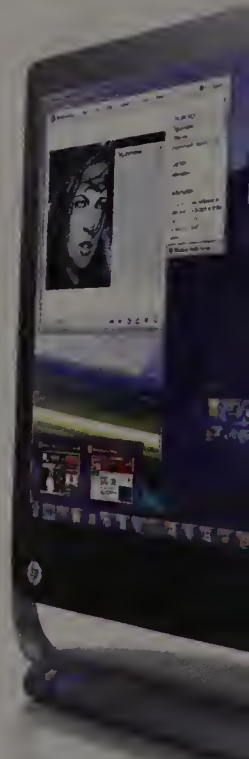


HP TOUCHSMART
9300 Elite



← ● **HP TOUCHSMART 9300 ELITE**
The Consummate Workhorse
 Offering a responsive touchscreen on an easy-to-adjust stand, this HP system performs business tasks capably and has a good amount of multimedia power.

● → **HP OMNI 27**
Eye-Catching Design
 A 27-inch edge-to-edge display gives this HP unit a seamless look, though it is not a touchscreen. The AIO can do TV; video playback runs smoothly.



TOWER DESKTOPS HAVE HAD A GOOD RUN. All-in-one PCs, expensive upstarts just two or three years ago, have all but usurped the throne. All-in-ones take a fraction of the space of a traditional PC without sacrificing much performance, and

their performance has improved while prices have dropped. All-in-ones are paving the way for touchscreen adoption outside of tablets and phones, too. Touch and gestures are baked into Windows 8 (see page 60), and all-in-ones are ahead of the curve.

We tested seven all-in-ones for this article, using our revamped WorldBench 7 benchmark suite, which pits PCs against a battery of tests based on real-world tasks. Be sure to read all about our new methods and the apps we use at find.pcworld.com/72759.

1 HP TouchSmart 9300 Elite

\$1599 | 23-inch screen

HP's TouchSmart 9300 Elite is a 23-inch all-in-one made for business. It may not be much to look at, but it performs nicely, sits on an easy-to-adjust stand, and tackles multimedia well.

Our \$1599 review model had an Intel Core i7-2600 CPU, 8GB of RAM, a 1TB hard drive, a discrete Nvidia GeForce GT 425M graphics card, and a slot-loading Blu-ray drive. Standard features include a high-def webcam, plus Bluetooth and Wi-Fi connectivity. And as befits a business PC, it runs Windows 7 Professional.

In PCWorld Labs WorldBench 7 benchmark tests, the TouchSmart 9300 Elite earned a score of 86, besting most all-in-ones we've seen. Graphics performance isn't great, but still among the top results you'll get from an all-in-one: On our Dirt 3

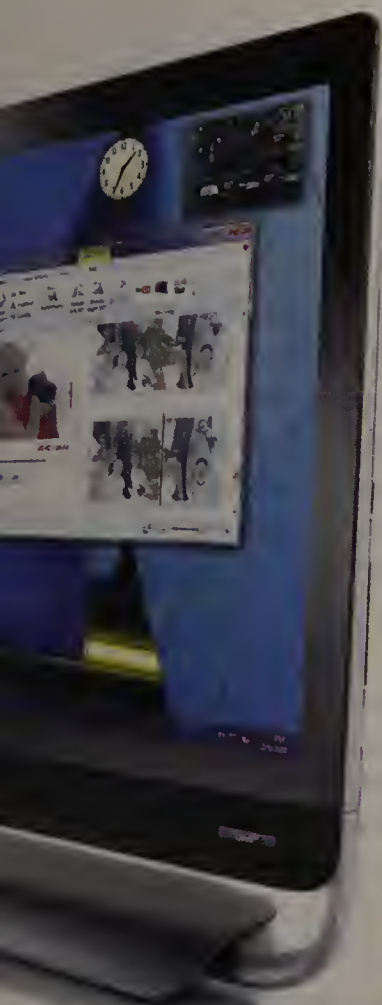
tests, it produced a frame rate of 41 frames per second at low quality settings and 1920-by-1080-pixel resolution. We needed to dial down to 1024 by 768 to achieve a playable frame rate under the high quality settings; on this test it reached 38.1 fps.

The TouchSmart 9300 Elite is not beautiful. It sits on a shiny, black, solid plastic stand, which is by far the most attractive part of the design. As on HP's TouchSmart 610, the entire display can slide down until it's almost parallel to the desk, which makes tapping the touchscreen much more convenient.

As for the sleek but boring wireless peripherals, the keyboard provides good feedback, though the Chiclet-style keys are so flat that they take a little getting used to. The mouse is a tad heavy and large, but it moves smoothly and feels comfortable.

On the left side of the PC, you'll find a multifunction card reader, two USB 2.0 ports, headphone and microphone jacks, and volume controls. The right side has just the slot-loading optical drive. On the back, behind a somewhat inconvenient panel, are four more USB 2.0 ports, an ethernet port, an audio-out jack, a DisplayPort connection, and a Kensington lock slot.

The glossy, 23-inch, LED-backlit widescreen display has a native resolution of 1920 by 1080 pixels. The touchscreen is responsive, accurate, and generally easy to use. The display



LENOVO IDEACENTRE B320 HDTV, Budget All-in-One, or Just Confused?

This affordable Lenovo PC is a decent performer that attempts to be both a media-center powerhouse and a basic work-oriented system.



looked excellent, if slightly dark, with crisp images and good color fidelity. Off-axis viewing angles were better than most, though we noticed some loss of clarity and brightness.

Multimedia playback was superb. The speakers are so loud that sitting within 2 feet of the computer with the speakers at maximum volume was almost painful; they sound full, with good-but-not-great bass performance. Video looked very good, with little to no artifacting or fuzziness, even in HD streaming tests. Still, the system lacks some features that we would expect in an all-in-one meant to double as a TV: Our review model came without a built-in TV tuner (no surprise there), HDMI-out, an eSATA port, or any USB 3.0 ports, falling a little short of being an awesome multimedia powerhouse.

Ultimately, the HP TouchSmart 9300 Elite does what it's supposed to do: perform business tasks quickly and easily. If you're seeking to get things done, this all-in-one fits the bill very nicely.

2 HP Omni 27 \$1250 | 27-inch screen

When we first saw HP's Omni 27 sitting in the PCWorld Labs, we were absolutely taken by its gorgeous, edge-to-edge, 27-inch glass screen. The rest of the design leaves a little to be desired, but this display is certainly a step in the right direction.

Our review model, priced at \$1250, carries an Intel Core i5-2400S processor, 8GB of RAM, a 1TB hard drive, and a slot-

loading Blu-ray disc player. Built-in Wi-Fi connectivity and an integrated webcam and microphone come standard.

In our WorldBench 7 benchmark suite, the Omni 27 achieved a mark of 98, landing near the top of the all-in-one category. Since the Omni 27 doesn't have a discrete graphics card, its graphics performance was less impressive. On our Dirt 3 tests, it managed a paltry frame rate of just 28 fps when dialed all the way down to 1024-by-768-pixel resolution and low quality settings.

A thin black bezel surrounds the beautiful 27-inch display. The screen's glass extends over the bezel, giving the entire computer a seamless and somewhat iMac-inspired look. The speakers are located below the screen, and the whole system perches on a matte-silver easel stand. Although you can easily tilt the display, it doesn't move much vertically.

Offering a native resolution of 1920 by 1080 pixels, the Omni 27's display is attractive. Color representation is excellent, and images are crisp, but the glass surface produces a lot of reflections when the brightness isn't turned all the way up; fortunately, the screen is very bright. The only real complaint we have is that it isn't a touchscreen, which is pretty much standard for all-in-one desktops these days. We know that HP can make a great touchscreen, so we're a little disappointed.

The system's power button is located at the top-right edge of the screen. The left side sports a multifunction card reader and a pair of USB 3.0 ports, along with both microphone and headphone jacks. The right side offers the slot-loading Blu-ray Disc drive and an HDMI input port. The rest of the ports—gigabit ethernet, four USB 2.0 ports, audio-out, a subwoofer jack, >>

and a lock slot—are all positioned on the back of the machine.

The Omni 27 comes with wireless peripherals. The keyboard has flat Chiclet-style keys, volume controls, and a sleep button, and is slightly curved at the top (instead of having pop-out feet to create an angle). It's comfortable enough for casual typists, but the keys are a little too small and close together for extended typing. The mouse is basic, providing just two buttons and a scrollwheel, but it's comfortable and moves smoothly.

This is definitely an all-in-one PC that can double as a small television. In our testing, the Blu-ray playback was outstanding, while high-definition video streaming looked smooth. The speakers are loud, and they produce good bass representation and depth if you turn HP's Beats Audio sound-enhancement feature on. Voices sounded a little fuzzy at the highest volume.

If you want a beautiful all-in-one with a large screen (that isn't a Mac), the HP Omni 27 is an attractive choice.

3 Lenovo IdeaCentre B320 \$899 | 21.5-inch screen

Lenovo bills the 21.5-inch IdeaCentre B320 as a "sleek desktop" with "two extreme missions"—to be an HDTV and to be a PC. In the end, however, this machine spreads itself a bit thin.

In addition to an Intel Core i5-2500S processor, 4GB of RAM, and an AMD Radeon HD 6450 graphics card, our review model featured an impressively large 2TB hard drive—an interesting choice for a PC meant to double as an HDTV (you *will* be able to fit plenty of ripped movie files on it). Standard components include a webcam and a microphone, and a DVD-RW drive.

In WorldBench 7, the B320 received a score of 88, a strong mark for an all-in-one. Graphics performance was less stellar, as it generated a frame rate of 47.5 fps on our Dirt 3 gaming benchmark at low quality settings and 1024 by 768 resolution.



Top 7 All-in-One Desktop PCs

	MODEL	Rating	Performance	Features and specifications	Bottom line
1	 <p>HP TouchSmart 9300 Elite \$1599 NEW find.pcworld.com/72787</p>	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 7 score: 86 Overall design: Very Good Graphics: Very Good 	<ul style="list-style-type: none"> 3.4GHz Core i7-2600 8GB RAM; 1TB storage Nvidia GeForce GT 425M Blu-ray drive 	This HP system performs business tasks with ease, and delivers just enough power for handling multimedia chores.
2	 <p>HP Omni 27 \$1250 NEW find.pcworld.com/72788</p>	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 7 score: 98 Overall design: Very Good Graphics: Good 	<ul style="list-style-type: none"> 2.5GHz Core i5-2400S 8GB RAM; 1TB storage Intel integrated graphics Blu-ray drive 	If you're looking for an attractive all-in-one with a massive screen that can double as a TV, the HP Omni 27 is a great choice.
3	 <p>Lenovo IdeaCentre B320 \$899 find.pcworld.com/72789</p>	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 7 score: 88 Overall design: Very Good Graphics: Good 	<ul style="list-style-type: none"> 2.7GHz Core i5-2500S 4GB RAM; 2TB storage AMD Radeon HD 6450 DVD-RW drive 	An inexpensive option, this Lenovo all-in-one machine strives to handle business and pleasure in equal measure.
4	 <p>BEST BUY HP Omni 220 Quad \$1000 NEW find.pcworld.com/72790</p>	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 7 score: 106 Overall design: Fair Graphics: Good 	<ul style="list-style-type: none"> 2.8GHz Core i7-2600S 6GB RAM; 1TB storage AMD Radeon HD 6450 Blu-ray drive 	HP's impressively powerful all-in-one provides speed and a Blu-ray player, and they come in an affordable package.
5	 <p>Lenovo ThinkCentre Edge M91z \$900 find.pcworld.com/72399</p>	★★★★★ VERY GOOD	<ul style="list-style-type: none"> WorldBench 7 score: 92 Overall design: Very Good Graphics: Good 	<ul style="list-style-type: none"> 2.5GHz Core i5-2400S 4GB RAM; 500GB storage Intel integrated graphics DVD-RW drive 	Offering a sleek, cool-looking screen, this business-oriented Lenovo all-in-one PC boasts excellent performance.
6	 <p>Samsung Series 7 All-in-One \$1199 NEW find.pcworld.com/72791</p>	★★★ GOOD	<ul style="list-style-type: none"> WorldBench 7 score: 81 Overall design: Very Good Graphics: Good 	<ul style="list-style-type: none"> 2.7GHz Core i5-2390T 8GB RAM; 1TB storage Intel integrated graphics DVD-RW drive 	Samsung's first foray into the all-in-one desktop scene has a number of cool features, though it's far from perfect.
7	 <p>Dell Inspiron One 2320 \$1250 find.pcworld.com/72474</p>	★★★★ GOOD	<ul style="list-style-type: none"> WorldBench 7 score: 77 Overall design: Fair Graphics: Superior 	<ul style="list-style-type: none"> 2.5GHz Core i5-2400S 8GB RAM; 2TB storage Nvidia GeForce GT 525M Blu-ray drive 	Competitively priced, Dell's 23-inch all-in-one is a solid performer, but you'll have to tolerate the plain chassis.

CHART NOTES: Ratings are as of 3/12/12. Visit find.pcworld.com/72785 to see in-depth reviews, the latest news, and buying guides for desktop PCs.

BEST BUY

HP OMNI 220 QUAD → Speed to Spare

Though its 21.5-inch screen doesn't support touch, this HP model—the fastest in our test group—is a nice system for buyers seeking an all-in-one with great general performance.



4 HP Omni 220 Quad \$1000 | 21.5-inch screen

We're not big fans of all-in-one designs that place large, obvious speakers below the screen. However, the B320's chassis is sleeker than those of competitors with similar speaker arrangements. A thin, shiny black bezel surrounds the screen, and a few touch-sensitive buttons occupy the lower-right corner. You'll also find non-touch-sensitive indicator lights in the lower left.

On the left side are two USB 2.0 ports, headphone and microphone jacks, and a multifunction card reader. The rear offers four more USB ports, gigabit ethernet, a PS/2 port, and a TV tuner. The right side holds the DVD-RW drive and buttons for entering TV mode, changing channels, and adjusting volume. A dedicated picture-in-picture mode button sits on the side, too.

The glossy, 21.5-inch touchscreen supports a full HD native resolution of 1920 by 1080 pixels. In our testing, images looked good—colors were bright and clear, and text was crisp—but video playback was a little less satisfactory. HD video (both streaming and native) exhibited a lot of blocky artifacts and general noise. The touchscreen itself seemed quite accurate.

Included are a wireless keyboard and mouse, plus a remote control. The keyboard has typical media-control buttons as well as the Lenovo Vantage Technology button, which gives access to custom Lenovo utilities. The keyboard sports a brushed-metal background with orange accents. (The former is attractive; the latter, not so much.) Though the keys are widely spaced and easy to type on, they aren't as responsive as we'd like, especially when we type quickly. The optical wireless mouse is thin and light, has a bunch of extra buttons, and can double as a pointer. It's pretty convenient, but far from the most effective mouse we've ever used; for one thing, it's much thinner than a typical mouse, which makes it slightly uncomfortable to hold.

The Lenovo IdeaCentre B320 is interesting, to say the least. It has an unusual mix of attributes—it offers only a 21.5-inch screen and it lacks a Blu-ray drive, but it also has a big focus on being a media center. The \$899 price tag makes it a good fit for a cash-strapped college student in a small dorm room. If you're looking for stronger media capabilities and have a bit more coin to spare, a larger machine could be a more satisfying investment.

HP's Omni line is known for its speediness, and the HP Omni 220 Quad, which starts at \$1000, is no different. It offers a relatively small, 21.5-inch screen, and it has some drawbacks, but its overall power may persuade you to overlook them.

The standard model packs an Intel Core i7-2600S processor, 6GB of RAM, Wi-Fi connectivity, and Beats Audio enhancement technology. Our review unit was equipped with a 1TB hard drive and an AMD Radeon HD 6450 discrete graphics card.

The Omni 220 is fast. On WorldBench 7, it posted an impressive mark of 106, ranking as the fastest all-in-one generally. The graphics performance isn't fantastic, however. In our Dirt 3 tests, it eked out 47.8 frames per second at low quality settings and a resolution of 1024 by 768 pixels. You shouldn't buy this model if you want a gaming machine; if you temper your expectations, however, it is capable of decent results.

Sporting a nondescript design, the system sits on an L-shaped arm. The PC overall isn't particularly attractive or ugly—it just is. The 21.5-inch display, which has a native resolution of 1680 by 1080 pixels, is not a touchscreen, and its off-axis viewing angles are dismal. It's also a little too bright, as the colors look washed out. On a positive note, the matte screen has little glare.

The included Beats Audio software enhances the speakers considerably (they sound thin and bassless without Beats Audio turned on). But even with this assistance, the speakers are not especially loud, and audio is fuzzy at the highest volume setting.

The computer's four USB 2.0 ports, gigabit ethernet port, and audio-out port, along with the Kensington lock slot, are located on the back. On the left side are two USB 3.0 ports, separate headphone and microphone jacks, and a multifunction card reader. The right side houses the tray-loading Blu-ray Disc player. >>>

Accompanying the PC are a wired mouse and keyboard, both of which are mediocre. The keyboard is flat, with regular keys, and is a little stiff for typing. It does have volume-control buttons, plus a red Beats Audio key for turning the speaker-enhancement software on and off. The optical mouse is a typical two-buttons-with-scrollwheel affair. It's light and responsive—a plus, since you don't have a touchscreen to fall back on. If you're especially finicky about your input devices, though, you'll want to consider replacing the stock offerings with your own set.

The Omni 220's display is less than impressive, but if you want a Blu-ray player and a fast, inexpensive all-in-one that offers great general performance, this PC is not a bad choice.

5 Lenovo ThinkCentre Edge M91z

\$900 | 21.5-inch screen

Lenovo's ThinkCentre Edge M91z is a stylish 21.5-inch all-in-one with an edge-to-edge glass screen and stellar performance overall. It omits multimedia features such as a Blu-ray drive and a discrete graphics card, but it should be fine for business users looking for something a little nicer than the typical desktop.

Our \$900 review model comes with an Intel Core i5-2400S processor, 4GB of RAM, and a 500GB hard drive. A DVD burner

and built-in Wi-Fi connectivity are standard components.

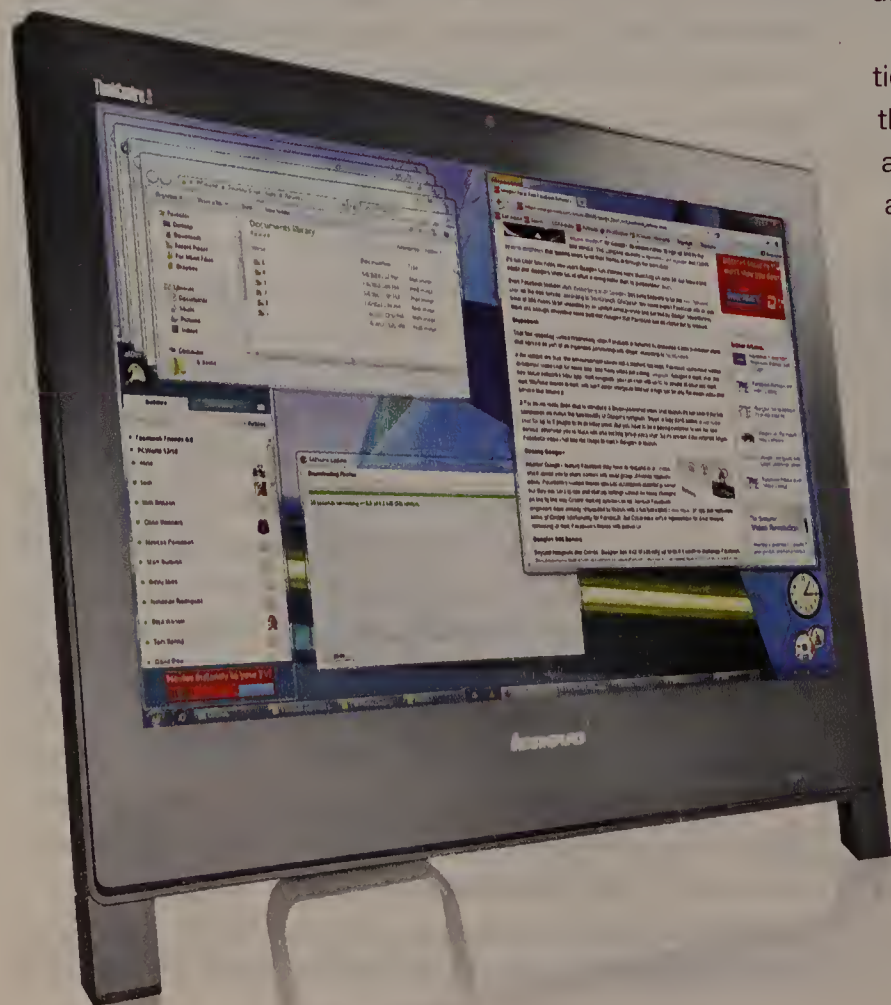
Don't let those specs fool you, however: The M91z has plenty of power for your business needs. In WorldBench 7 tests, it earned a score of 92, ranking third after both HP Omni entrants in this test group. On the other hand, this PC is not so amazing in graphics performance (no surprise, of course, since the system must rely on Intel's integrated graphics). On our gaming tests, it failed to deliver playable frame rates; the best we saw was 26.6 fps in Dirt 3 at low quality settings and a resolution of 1024 by 768. High-quality graphics performance isn't a must-have on business machines; if you occasionally handle graphics-oriented tasks, though, a discrete graphics card can do wonders.

The M91z boasts a cool "infinity screen" design, in which the glass extends from edge to edge. As a result, the screen looks almost bezel-free, similar to Apple's iMac and MacBook Pro lines. The bezel measures about an inch thick (about 3 inches on the bottom), and has a webcam and microphone built in. Four slim buttons (one for switching to VGA, two for brightness, and a fourth for turning the machine off) sit at the bottom.

The M91z's 21.5-inch display is bright, though it's not a touchscreen. Viewing angles are particularly good—you lose hardly any of the image quality horizontally or vertically—but the glossy surface is prone to reflections. Still, color and video playback look fine. We spotted compression artifacts in full-screen HD video, especially in darker scenes, but that's to be expected considering the lack of a discrete graphics card. Audio playback is also pretty impressive, sounding very loud, if tinny at times.

The PC sits at an angle, propped up by a small yet sturdy plastic stand. Two feet keep the bottom of the screen an inch from the desk surface. These feet make the PC look a little awkward, and take away from the otherwise attractive design, but they allow you to slide your keyboard underneath for storage.

Ports are on the side and back of the M91z. On the left are two USB 2.0 ports, microphone and headphone jacks, and a card reader. The back has four more USB 2.0 ports, as well as an HDMI-out port, a VGA-in port, and an ethernet port. While you can use the HDMI-out port only to extend your desktop onto another display (or mirror it), the VGA-in port lets you use the all-in-one's screen as an external monitor.



← ● **LENOVO THINKCENTRE EDGE M91Z**
A Business-Savvy Sprinter
Sporting a sleek, edge-to-edge glass screen, this Lenovo all-in-one provides great general performance, ranking third among our test group in WorldBench 7.

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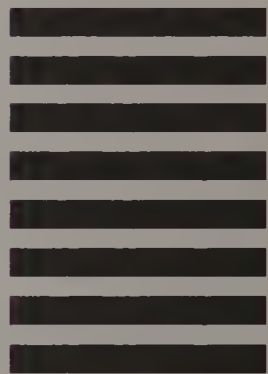
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Our review model came with a USB wired keyboard and mouse. The flat, matte-black keyboard has Chiclet-style keys and red accents. The keys are flat on three sides but have slightly rounded bottoms. Typing is comfortable, and the keys are quiet; they don't produce a lot of feedback, though, so you might make a lot of typos. By default, dedicated buttons replace the function keys (Apple does the same thing), and pressing the <Fn> key produces the typical "Function key" actions. The special buttons include audio and media controls, as well as lock, refresh, print, open, and search buttons.

The optical mouse included with the system is basic: light, rounded, and bearing the traditional red Lenovo accents. In this case, the scrollwheel is red, and it's similar in texture to Lenovo's signature eraserhead pointer.

The Lenovo ThinkCentre Edge M91z is a powerful business machine that offers the added benefit of being cool-looking. It's missing a few features we'd like to see, such as an HDMI-in port, Bluetooth connectivity, and a discrete graphics card, but at \$900 it's great for small or medium-size businesses.

6 Samsung Series 7 All-in-One

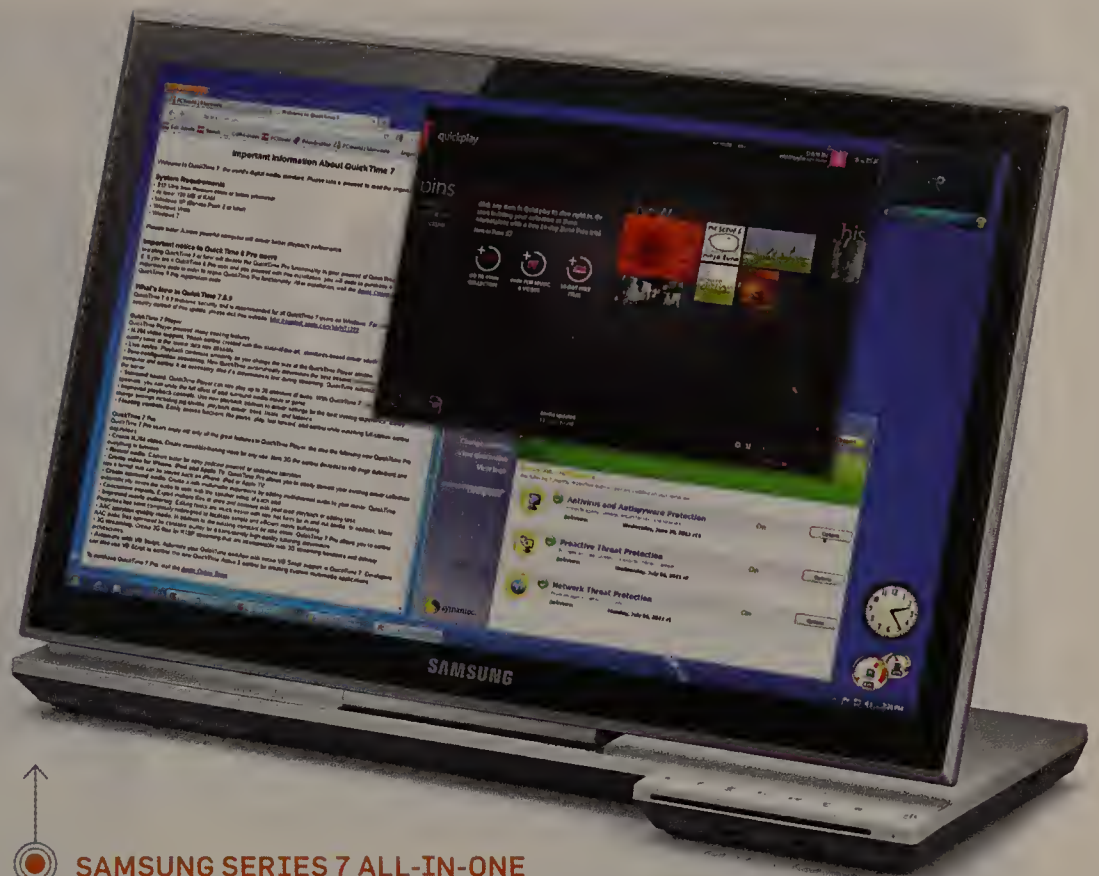
\$1199 | 23-inch screen

The 23-inch Series 7 All-in-One (\$1199) is Samsung's first foray into the all-in-one market, and it's a beauty. Check out the chassis, to start: Most all-in-ones tuck the components behind their displays, relying on a stand or easel to prop the monitor up. Instead, Samsung packed the Series 7's innards into the base. The result is a thinner display that stands out in a crowded category.

The slot-loading DVD burner sits at the front, making it easy to reach. If you'd like to load photos or files, you can find a USB 3.0 port and a multiformat card reader on the right side; on the left side are the microphone and headphone jacks. Unfortunately, the base is fairly small, which limits the port selection (even for an all-in-one). The rear offers only four USB 2.0 ports, HDMI-in and HDMI-out connections, and an ethernet jack.

Running on a 2.7GHz Intel Core i5-2390T processor and 8GB of RAM, the PC relies on Intel's integrated graphics technology, which delivers decidedly lackluster gaming performance: On our Dirt 3 test, it reached a frame rate of just 28.9 fps when we dialed down to a resolution of 1024 by 768 and kept the settings low.

The machine offers a 1TB hard drive. A solid-state drive would improve performance substantially, but ratchet up the price. That



SAMSUNG SERIES 7 ALL-IN-ONE

A Svelte and Stylish Package

Samsung enters the all-in-one desktop market with a PC that hides its components in its base, allowing for an especially thin display. The custom touch interface is simple to use.

said, performance wasn't too shabby, as the Series 7 All-in-One earned a score of 81 on our WorldBench 7 test suite; for the category, it's not a barn burner, but it's certainly no slouch.

The 23-inch display has a native resolution of 1980 by 1080 pixels. The touchscreen is nicely responsive, though it won't replace a mouse and keyboard (we need to wait for Windows 8 for that). Samsung's Touch Launcher interface is a good compromise; it behaves much like smartphone and tablet interfaces, serving up big icons that you can drag around. It is optional, of course—you'll never have to fire up the software if you'd rather stick to the traditional Windows environment.

Audio playback is fine. Bass is lacking (since the chassis doesn't have enough room to hold anything substantial), and the sound can be tinny when you crank the volume up. But the speakers are suitably loud, and sound okay for casual watching and listening.

The bundled keyboard and mouse are wireless, but they connect via a dongle, taking up a USB port. The PC has built-in Bluetooth, so using your own Bluetooth models is an option. Regardless, while slim and sleek, the Samsung-provided peripherals aren't the most comfortable. The mouse is small, with two buttons, a scrollwheel, and back and forward buttons. The compact keyboard lacks media functionality; that might seem like a minor detail, but when you're watching a movie from a few feet away and can't quickly adjust the volume, you'll miss the convenience.

Adequate performance, a svelte and stylish chassis, and a custom touch interface—you'll find a lot to like here. We would have appreciated a Blu-ray player and better gaming results, but the Series 7 All-in-One offers a compelling design at a fair price. >>

DELL INSPIRON ONE 2320

Solid Performance, With Some Compromises

Dell's competitively priced 23-inch model is a good performer, and it's fine if you're on a budget, but it has an inaccurate touchscreen and a cheap-looking build.

7

Dell Inspiron One 2320

\$1250 | 23-inch screen

Dell's 23-inch Inspiron One 2320 proves that you can get a lot for a decent price. But you can't get everything, and slightly more expensive systems deliver a better value.

Our \$1250 review model has a 2.5GHz Intel Core i5-2400S processor, an Nvidia GeForce GT 525M graphics card, 8GB of RAM, a 2TB hard drive, and a Blu-ray Disc drive. The standard line offers Bluetooth and Wi-Fi, plus a webcam and microphone.

In WorldBench 7, it earned a score of 77, ranking in the middle of the all-in-one category overall, but at the bottom of this test group. Graphics performance was fair: In our Dirt 3 test, it managed a frame rate of 44 fps at low quality settings and 1920 by 1080 resolution. When we cranked the settings up, it reached 42.3 fps at 1024 by 768. You'll be able to get some decent gaming action here if you find a nice middle ground.

The glossy 23-inch touchscreen has a native resolution of 1920 by 1080 pixels. It's fairly bright, the colors look pretty true to life, and images appear crisp and clear—but only when they're not moving. Multimedia playback is merely okay. Streaming HD video looks good, though images are sometimes soft, with a moderate amount of artifacting (blockiness and noise) visible in high-motion scenes. Blu-ray video comes through very well, but in playing test videos we still detected a hint of artifacting.

Unfortunately, the touchscreen was consistently inaccurate in our testing. Our taps unfailingly registered about half a centimeter below where we touched. Windows 7 includes a touchscreen-calibration tool; you'll want to run through it if things seem off.

ONLINE: **Lenovo IdeaCentre A720**

Due in the first half of 2012 for \$1299, the IdeaCentre A720 has a superthin 27-inch display that can lie entirely flat. For our early impressions from its debut back at CES 2012, see find.pcworld.com/72614.



Audio is acceptable. The speakers, located below the screen, are loud; at their highest setting, however, audio sounds a little thin and bassless. At a more moderate level, the audio is good.

Regrettably, the speakers are set in such a way that the result looks as if Dell had just pasted the bezel and screen on top of the speakers. The system sits on two tiny faux-chrome feet, and leans on a thick and sturdy plastic stand. This combination of design elements makes the machine look cheap and unplanned. Despite the solid feel, appearances don't work in this PC's favor.

On the left are the headphone and microphone jacks, two USB 2.0 ports, a card reader, and the volume and brightness buttons. The right has the slot-loading Blu-ray Disc player and the power and input-change buttons. Most of the ports sit at the bottom rear: You get gigabit ethernet, HDMI-in, VGA-in, composite-in, an S/PDIF port, a TV tuner, a VGA port, line-out, a Kensington lock slot, and four additional USB 2.0 ports; the PC lacks USB 3.0.

The wireless keyboard has flat, small, Chiclet-style keys that are perhaps a little too soft to the touch, as they make virtually no sound when you're typing. The design is not exactly conducive to accuracy—our typing was rife with errors, because the keyboard gave insufficient feedback. The wireless two-button

mouse is standard, but we appreciate its look: It's smooth and black, like a pebble, and it has a little more weight than your typical optical mouse.

While we're not enamored of the Inspiron One 2320's general build, this 23-incher isn't so bad if you're on a budget. It provides some premium specs, as well as decent performance. But you will have to live with the cheap-looking design and the omission of USB 3.0 support. ●

From the editors of **PCWorld**

ANDROID

HERE'S HOW GUIDE

**HONEYCOMB/
ICE CREAM SANDWICH**

- Learn keypad shortcuts
- Explore customization tricks
- Find out how to manage music, video, & photos
- Get tips on installing apps



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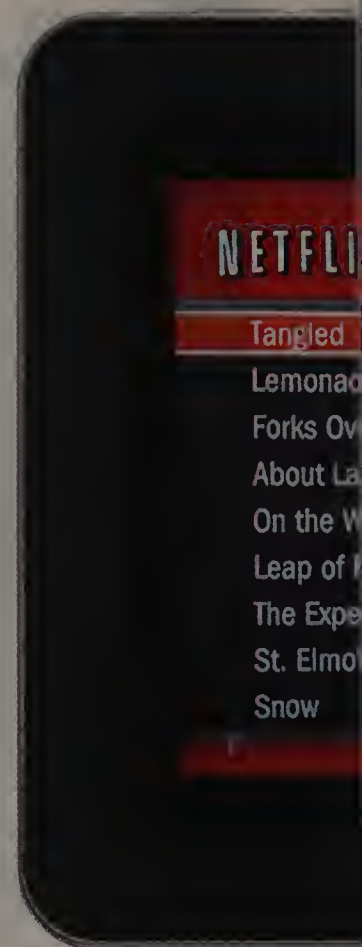
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Here's How



Get the Most From Your Netflix Streaming Video Subscription

Netflix Unlimited Streaming is still a great deal—and we've uncovered a few tips and tricks to help you take full advantage of your Netflix streaming subscription.

BY RICK BROIDA

SO YOU'VE DECIDED to sign up for Netflix. Smart move: Even with last year's notorious price hikes, the company's Unlimited Streaming service is a ridiculously good deal at a mere \$8 per month. You get commercial-free movies and TV shows, with

no limits on viewing, all streamed to whatever device you prefer—smartphone, tablet, game console, set-top box, and so on.

Subscribing is easy; but getting the best return on your eight-buck investment takes a little more effort. For example, have you tweaked your router so that it gives

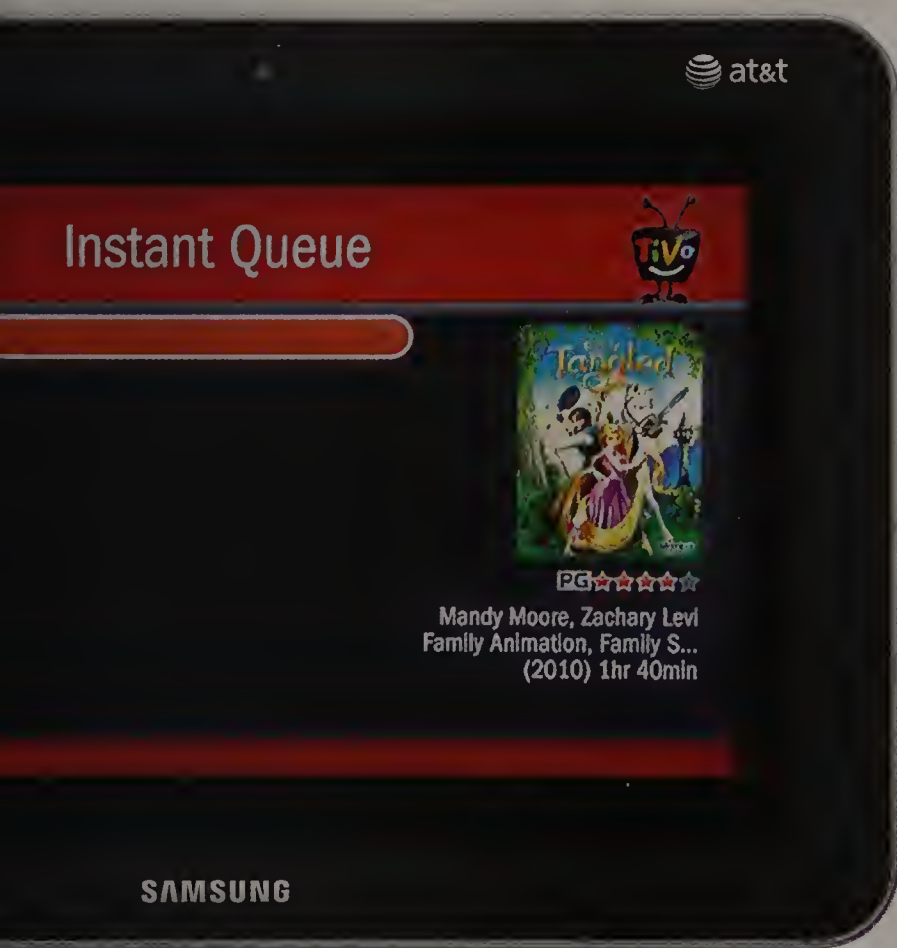
Netflix sufficient bandwidth? And do you know where to find the latest and greatest Watch Instantly releases? Read on to learn some useful tricks of the Netflix trade.

Choose the Best Netflix Interface

If you haven't yet deployed a Netflix-capable device in your home, here's something that you should know: Not all Netflix apps are created equal. The interface that you see on, say, a Roku box dif-

fers significantly from the one that you encounter on a Nintendo Wii console. And some interfaces are definitely better than others.

For example, Netflix looks hideous on TiVo. It offers nothing more than an ugly, unsortable text-based list of what is in your Instant Queue. You can't browse or search the Netflix library, and you can't add new titles to the queue; instead, you can play only what's already there. (Quick fix: If you're



lucky enough to have a tablet or a smartphone handy, you can fire up and use its Netflix app for browsing, searching, and adding items.)

On the flip side, Windows Media Center offers perhaps the single best Netflix viewing environment, with an attractive, easy-to-navigate interface that enables you to peruse your queues (both streaming and DVD), browse and search the libraries, add or remove selections, and more. You don't need to be using a particularly powerful PC—just one that runs Windows 7 and has an HDMI output. The icing on the WMC cake? Because PCs have keyboards, you'll find it

Not all Netflix apps are created equal. Windows Media Center's Netflix interface (left) is clean, image-rich, and easy to navigate, whereas TiVo's version (right) consists of an unsortable text-based list with few visual clues.

much easier to enter search terms from your PC than from your TV's remote.

Netflix looks pretty sharp on a Microsoft Xbox 360, too, but you have to be an Xbox Live Gold subscriber in order to access it. That will run you an extra \$60 annually on top of what you pay for Netflix. Thankfully, neither Nintendo nor Sony charges a premium for Netflix on the Wii or PlayStation 3, both of which deliver a versatile, pleasing experience. (One

cautionary note about the Wii, though: Its maximum resolution of 480p means that you won't get high-def video—a disappointment considering that an increasing amount of Netflix content is streamed in HD.)

Roku boxes make Netflix viewing enjoyable as well, especially if you grab the new Roku app for iOS devices. In addition to giving you a spare remote, it lets you enter search queries much more easily than with the Roku's on-screen keyboard.

If you're shopping for a television, Blu-ray player, or other device with built-in Netflix, try to get an in-store demo so that you can make

less doesn't work well, especially if you have an 802.11n router and your hardware is in fairly close proximity. But video streaming consumes a lot of bandwidth, especially when the content is HD video; and Wi-Fi is subject to interference, signal fluctuations, and other problems. If you want the best possible image quality and the most reliable connection, you're better off running an ethernet cable from your router to your box. (This recommendation assumes, of course, that the box in question contains an ethernet port. Tablets and smartphones don't, obviously, and neither do some of the latest Roku models.)

Optimize Your Router

Netflix relies on "adaptive streaming" technology, in which the service automatically adjusts the bit rate of the video stream based on bandwidth—the speed of the user's Internet connection. However, Netflix has no control over the way your router distributes the bandwidth that's available. And if you have a number of Internet-connected devices in your home, the Netflix stream might not be getting as large a pipe as it should.

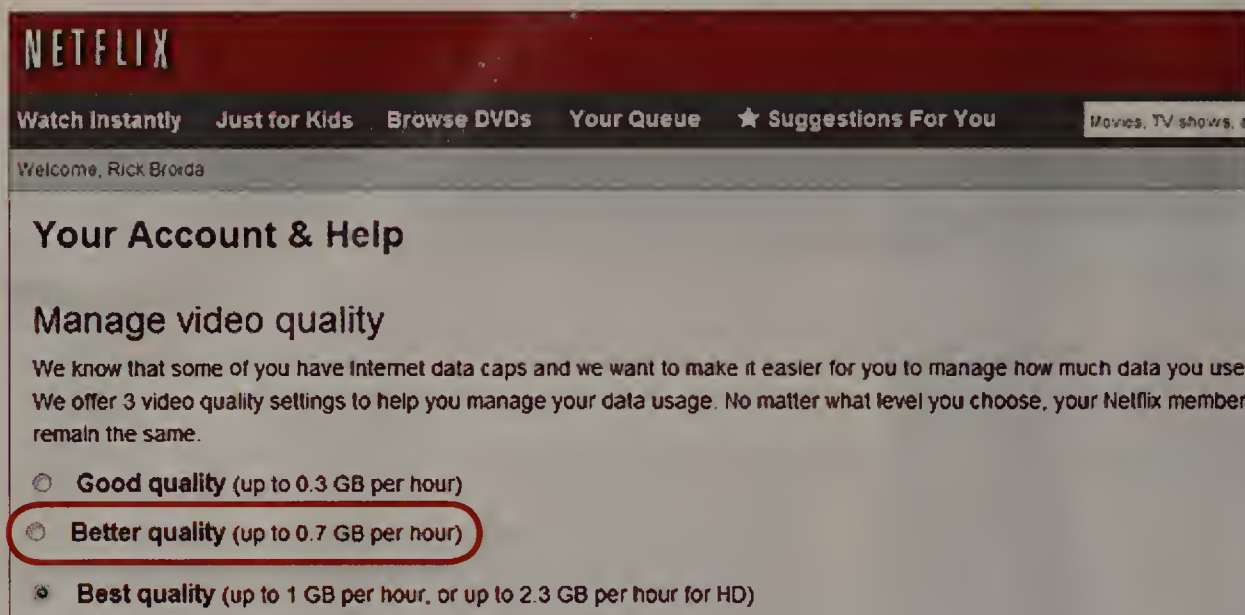
Many routers offer Quality of Service settings, meaning that they can customize how they handle network traffic. Let's say that you're streaming Netflix to a Blu-ray >>

sure you like the Netflix interface. At the very least, look for screenshots and user reviews online; nothing spoils the Netflix experience like a crummy interface.

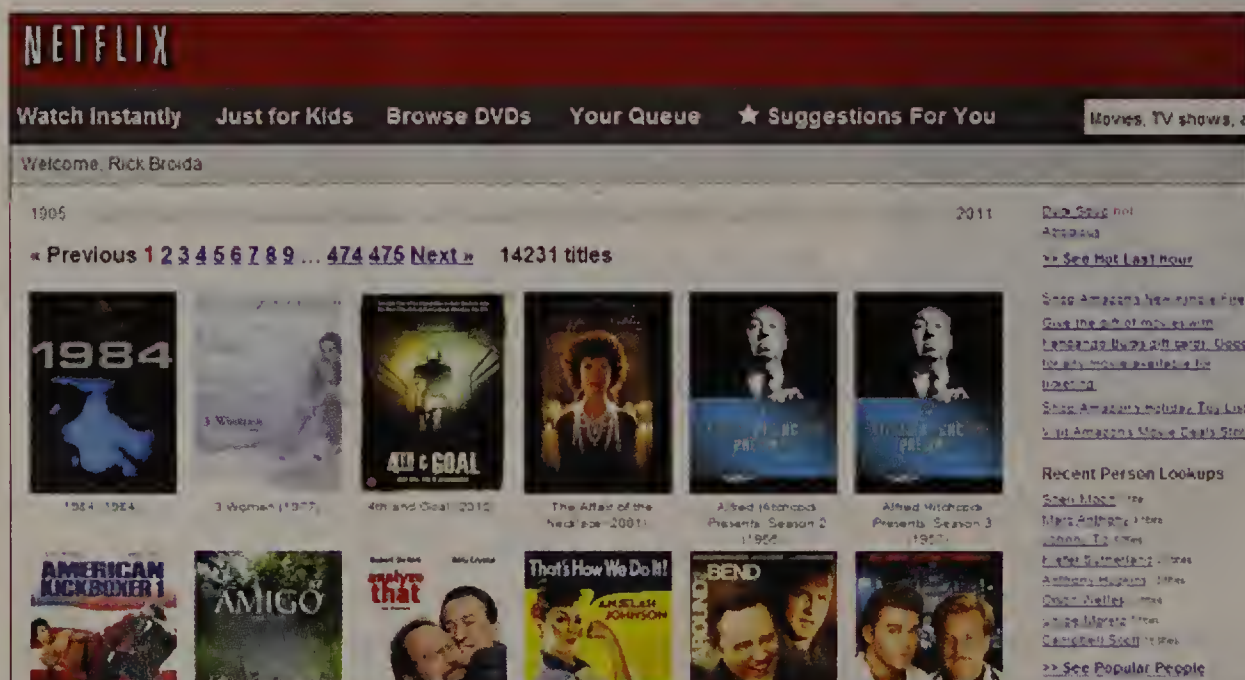
Go Wired If That Option Is Available

Given the choice between a wired connection that links your router and your Netflix-compatible hardware, and a wireless connection, you should always choose wired.

That isn't to say that wire-



DIAL DOWN YOUR Netflix streaming-video quality settings from Best to Better to conserve bandwidth.



NETFLIX IS ALWAYS adding interesting television and film selections to its Watch Instantly category. Checking InstantWatcher.com regularly is a convenient way to stay on top of those new releases.

player. That device should have a fixed (as opposed to a dynamic) IP address on your network, and you should configure that address so that its traffic receives priority over traffic to other devices (which can deal with comparatively less bandwidth).

Configuring these settings is different for each router, so consult your manual to determine how to tweak QoS for your Netflix device(s).

Adjust Video Quality Settings to Save Bandwidth

If you routinely watch Netflix on a 3G device—for example, on your smartphone or tablet—you run the risk of hitting your carrier's data cap. In fact, many cable and DSL providers limit users' monthly data consumption, so even heavy Netflix usage at home can burn through your allotted bits and bytes.

If this limitation proves to be a problem (that is, if you find that you're receiving unfriendly warnings from your service provider), you can dial back the quality of the video stream so that you consume less data. Just start up your browser, head to your Netflix account page, and click *Manage Video Quality*. On that page Netflix presents you with three quality choices: Good, Better,

and Best, which consume roughly 0.3GB, 0.7GB, and 1GB of data per hour of video, respectively. (For its part, HD chews through a hefty 2.3GB per hour.) Drop the quality setting from Best to Better, and see if that enables you to stay under your data cap. On a small screen, you may not notice much difference in the video quality.

Find the Latest 'Watch Instantly' Releases

Netflix regularly makes new movies and TV shows available for streaming, but the site's New Arrivals section tells only a fraction of the story of the incoming content. If you want lots of hard data on what's new and popular, head to InstantWatcher.com (instantwatcher.com).

The site catalogs every Watch Instantly title in the Netflix library and lets you sort them in multiple ways—by top-rated or lowest-rated movies, by *New York Times* Critics' Picks, by newest additions, by most popular movies, or within the subcategory of foreign films only, and much more—all with a wide array of filtering options. Another perk: The site lists movies that are coming soon to Watch Instantly.

A great way to use InstantWatcher is to click the *visual* link in the red toolbar up top. That will show you all of the latest movie and TV-show additions, but with thumbnail artwork images instead of just text. Warning: It's very easy to get addicted to checking this site every day.

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The conference fee is \$1,295 and includes all 16 seminars below (at least six more will be added). You may take every class — i.e., there will be no overlap as only one class will be going on at any one time. Classes only take place when we're cruising, between 8:30am and 7:30pm.

DON McALLISTER

- ePublishing 101
- Reading 101
- It's All About the Numbers
- It's All About the Data
- Whole House Audio
- Location, Location, Location
- Living with the Cloud
- The Power of Speech

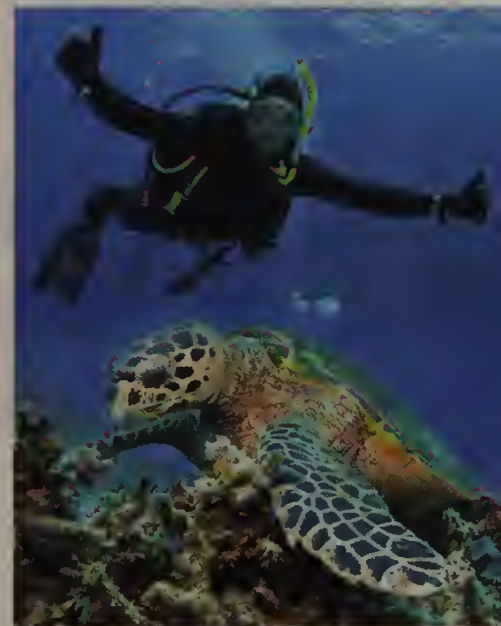
ALLISON SHERIDAN

- Creating Spectacular Documentation
- Turbocharge your Mac Productivity
- First Look at Accessibility on the Mac and iOS
- iOS Productivity Tools
- Video Conversion Made Easy for iOS
- Introduction to Podcasting
- Photography on iOS
- Security on Mac and iOS

SPEAKERS

Wally Cherwinski
Leo Laporte
Don McAllister

Allison Sheridan
Jason Snell
Sal Soghoian



CST# 2065380-40

Botanic Gardens and Taronga Zoo Tour

FULL DAY TOUR

November 6, 2012 (pre-cruise) (\$299 pp; \$199 as an add-on to the Parkes Observatory Tour, at right.)

Your adventure begins with a short transfer to the Royal Botanic Gardens in Sydney. Here you will embark upon a specialized tour to discover all that the Gardens have to offer.

After lunch we move to the Taronga Zoo where you will be met by Zoo Keepers and some of their friendly, cute, and cuddly counterparts before beginning your extended Australian Walkabout Tour. This is an exciting journey with an experienced guide, touring the Zoo's wonderful Australian animal displays.



Parkes Observatory

FOUR-NIGHT PACKAGE & TWO-DAY TOUR

November 3-7, 2012 (pre-cruise) \$1,999 pp based on double occupancy; \$2,599 single pricing. Includes eight meals, four hotel nights, all transportation and hotel transfers, and Observatory entrance fees.

Trip Includes: • Four (4) nights accommodation in the outstanding 4½-star Grace Hotel • Eight (8) meals as indicated per the above itinerary: four (4) breakfasts, two (2) lunches, and two (2) dinners • All land transportation (as listed on the above itinerary) • Entrance fees to all tourist sites (as listed on the above itinerary) • All transport is by 5-star charter coach. A commentary driver will be supplied for the travel to and from Parkes • Baggage handling, city and hotel taxes • GST (Goods and Services Tax)



Set Up Intel's Smart Response SSD Caching

Use the technology to enhance your PC's performance, without having to spring for an expensive, high-capacity solid-state drive.

INTEL'S Z68 EXPRESS chip-set for second-generation Core family processors supports Smart Response Technology, a solid-state caching technology designed to enhance overall system performance and responsiveness.

Intel's SRT intelligently monitors data read from and written to a standard hard drive, and caches the most frequently accessed bits of data to a faster solid-state cache. This arrangement enables SRT to offer SSD-like performance despite using a standard hard drive

for the PC's main storage.

Because SSDs are relatively expensive, many PC users pair a midsize (60GB to 120GB) SSD with a larger hard drive, using the SSD for the operating system, frequently used applications, and data, and reserving the hard drive for bulk storage. Unfortunately, such a configuration requires the user to manage multiple drive letters and potentially to move data manually between the drives if the SSD runs low on storage space. In contrast, SRT hides all or part of the

drive from the OS and caches data automatically. No additional drive letters are necessary, and data dynamically moves to and from the SSD based on individual usage patterns. The result is SSD-like performance and hard-drive-like capacity, without the user's having to manage multiple drive letters.

SRT Installation

Installing SRT on a system containing a single SSD and a single hard drive is easy. First, connect both drives to the SATA ports in your system; then fire it up, enter the system BIOS, and configure the SATA controller to RAID mode. Restart the system

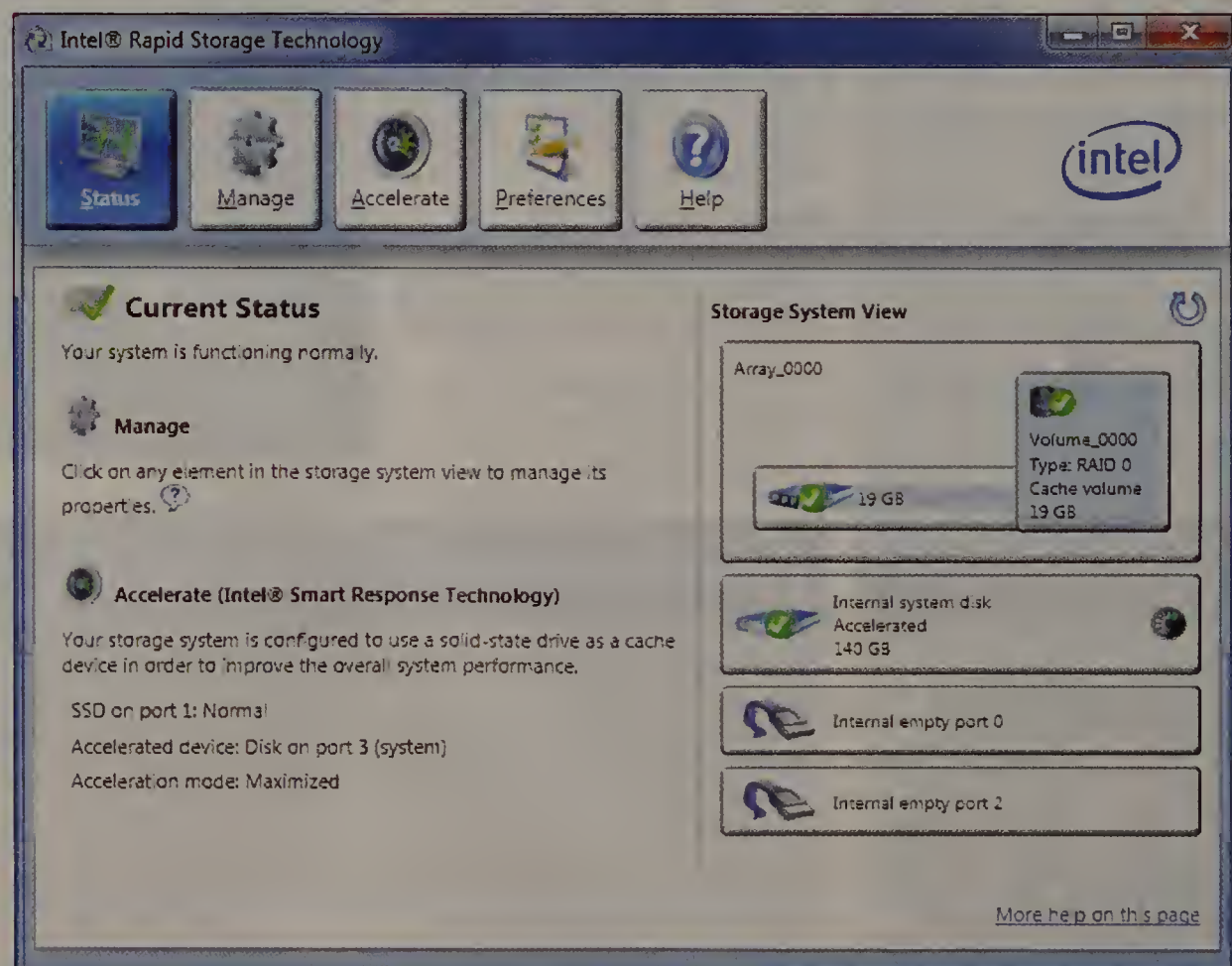
and install Windows on the hard drive, ignoring the SSD.

When the Windows installation is complete, install the drivers for your PC's components, including chipset drivers and Rapid Storage Technology (RST) drivers; you can download both of them from the Intel Download Center (find.pcworld.com/72735).

Once the drivers are in place, the system will restart, and the RST control panel will be accessible via an icon in the system tray. Double-click the *RST* icon; in the resulting control panel, click the *Accelerate* menu button, select the SSD, and specify how much storage space to use. On a solid-state drive, SRT can use 64GB of space for caching. With a 64GB or smaller SSD, you can use the entire drive and the OS will view the system as having only one drive. With an SSD larger than 64GB, you can use as much of the drive for SRT as you like, partitioning the unused space and assigning it a drive letter.

After selecting the SSD and defining its capacity, enable acceleration and select an SRT mode. Enhanced mode is essentially a write-through cache mode in which hard-drive performance limitations constrain the write speeds. Maximized mode acts as a write-back cache, which provides higher overall performance because writes are cached and written to the hard drive later.

—Marco Chiappetta

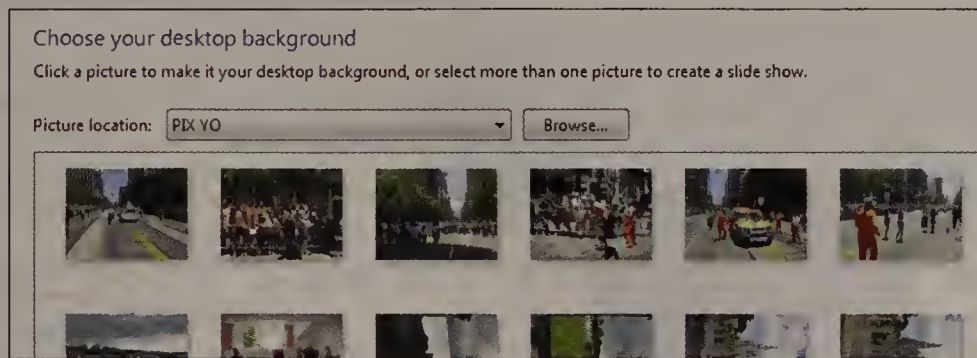


IN A PROPERLY configured system, you can enable or disable Smart Response Technology via the Rapid Storage Technology control panel, which is installed along with the storage controller's drivers.

Customize Desktop Backgrounds in Windows 7

IF YOU HAVE ever right-clicked your Windows 7 desktop and then clicked Personalize, you've undoubtedly encountered the themes that Microsoft bundles with its operating system. These themes include collections of desktop backgrounds—snazzy photos that appear behind your icons.

Though it may not be immediately obvious to you, it's possible to add your own collection of photos to the prepackaged theme options, and even mix them in with whatever the current desktop theme (which consists not just of photos, but also of icons, sounds, window colors, and screen savers) happens to be. Here's how:



WINDOWS 7 MAKES it easy to swap in a customized background desktop image.

- 1 Collect all the photos you want to use into a single folder. The name and location don't matter, so long as you remember both.
- 2 Right-click any open space on your Windows desktop, and choose *Personalize*.
- 3 Click the *Desktop Background* option.
- 4 Next to Picture Location, click *Browse*.
- 5 Navigate to the folder containing the desktop pho-

tos you want to add; click the folder, and then click *OK*.

6 By default, Windows will select all of the photos contained in that folder. If you

want to exclude some of those images, clear their checkboxes.

7 Modify any other slideshow settings you want to adjust, such as Picture Position and the change frequency. When you're done, click *Save changes*.

8 You'll see a new Unsaved Theme. To apply it at once, click it; then click *Save theme* and decide on a name for your new theme.

—Rick Broida

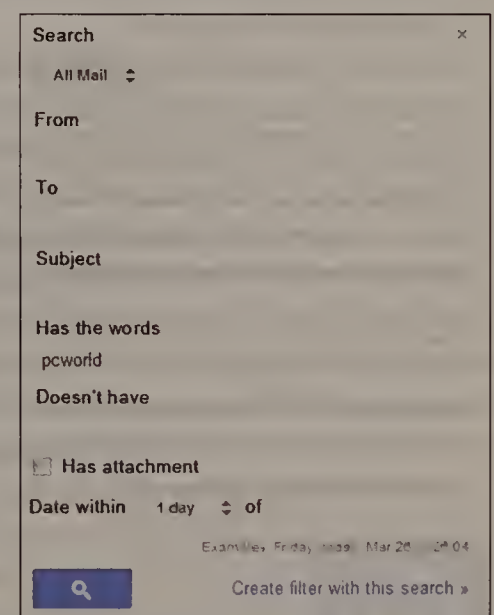
Set Up Email Filtering Criteria With Gmail Filters

TO CREATE A Gmail filter, you must first establish search criteria for the filter.

Start: In the Gmail search box, click the expansion arrow to reveal the advanced search options.

Decide on the types of mail you want to manage with this filter, and fill in your criteria accordingly. To find and manage mail pertaining to *PCWorld*, for example, type **pcworld** in the 'Has

the words' text box. You can create a filter based on the sender, recipient, subject, keywords, date range, or presence of an attachment. You can also use the asterisk wildcard character in your filters to match anything. For



EMAIL'S ADVANCED search options let you specify mail filtering criteria.

instance, enter the search term ***@pcworld.com** to call up all messages that have a pcworld.com email address.

Finish: Click the *Create filter with this search* link at the bottom of the search options.

—Michael King

Remove and Individually Clean Your Keyboard's Keys

IF YOUR PC keyboard looks grimy, you may need to remove and clean the keys separately, using a blunt tool such as a butter knife or flathead screwdriver. First, however, confirm that your keyboard supports key removal. Then:

1. Set the tool under a corner of a key, and pry off the key.
2. After removing all of the keys, wash them individually with water and soap, or alcohol, to remove dirt.
3. Wipe off the keys, and put them on a towel to air-dry.
4. Using compressed air or a gentle vacuum, thoroughly blow out the keyboard area that the keys normally cover.
5. Dip a cloth or towelette into isopropyl alcohol, and wipe it along the inner surfaces of the keyboard.
6. When the keys are fully dry, pop them back into place. Each key should snap back on with only slight pressure.
7. Give everything a last wipe with a dry, lint-free cloth.
8. If you're using a wired desktop keyboard, plug it in.

—Michael King

ANSWER LINE

? How can I find out who else has been using my PC? —Azhar Iqbal

CAN EVERYONE in your home or office log on to your PC as you? If so, you need to fix that first: Seeing who's using your PC isn't as important as controlling who has access.

You will need to set up a password-protected administrator account—and it should be the only administrator account on your PC. You can make this adjustment from Control Panel's User Accounts applet. In Vista or Windows 7, click *Start*, type *user*, and select *User Accounts*. In XP, click *Start*•*Run*; type *nusrmgr.cpl*, and press <Enter>.

In picking a password, choose something that close relatives or coworkers won't guess.

If other people need to use the PC, give them their own accounts. But make them Standard accounts (Limited in XP), not administrator ones.

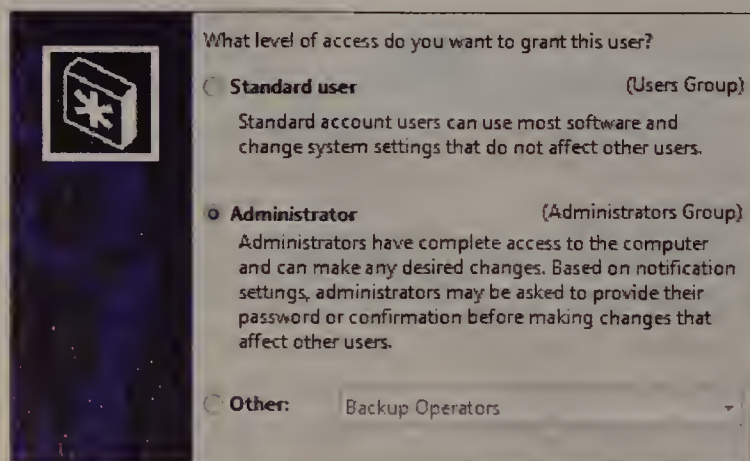
Windows 7 comes with a good child-protection program: Parental Controls. The free Norton Online Family service (find.pcworld.com/72782) can also help you here.

For encrypting your sensitive files, I recommend using the free TrueCrypt download (find.pcworld.com/72783).

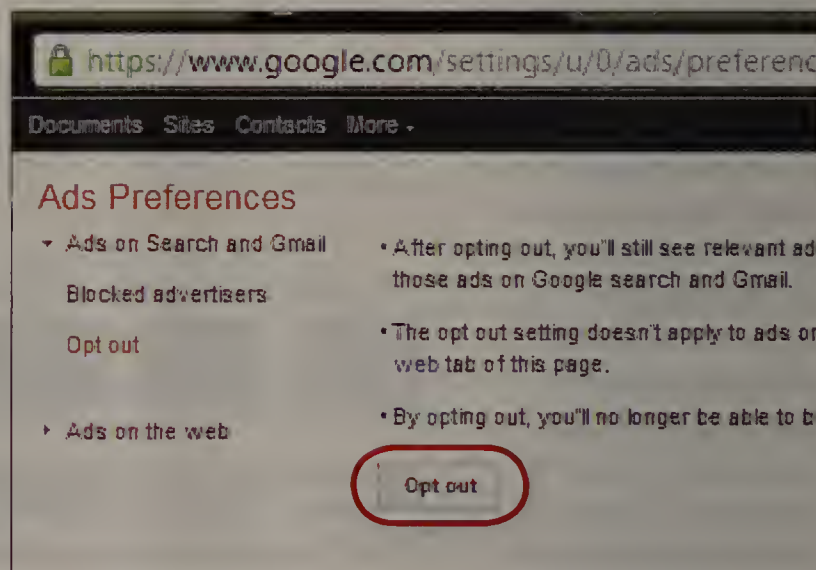
Use your browser's private mode to prevent others from seeing where you've been surfing. In Chrome, click the wrench icon in the upper-right corner and select *New incognito window*. In Firefox, select *Tools*•*Start Private Browsing*. In IE, click the tool icon in the upper-right corner and then select *Safety*•*InPrivate Browsing*.



LINCOLN SPECTOR



YOU CAN SET up a password-protected administrator account for yourself in Control Panel's User Accounts applet.



TO DISABLE PERSONALIZED ads tied to searches, click the 'Opt out' button in the Ad Preferences section of your Google account.

Take Charge of Google's Revised Privacy Controls

GOOGLE'S PRIVACY settings can be tricky to navigate, but these tips should help limit what Google can find out about you.

Google Dashboard offers an overview of the information that Google has stored on your personal account across many of its services. Go to google.com/dashboard and log in with your Google account (typically an email address). Click through the various services and review the data that Google is storing. Then clear out any data you no longer want associated with your account.

Google Web History keeps track of your Web browsing to help Google serve you customized search results. Even while you're logged out of your Google account, Google can track your search history via a browser cookie. To turn this off, visit google.com/history while signed into your Google account and

click *Remove all web history*. On the next screen, click *OK* to confirm. Google will then stop tracking your Web history to improve its search accuracy, but as the Electronic Frontier Foundation notes, it may continue to log the data for internal purposes.

If you don't have a Google account, or if you are logged out of it, visit google.com/history/optout and click *Disable customizations based on search activity*.

To disable personalized ads, head over to google.com/settings/ads. In the left column, under 'Ads on Search and Gmail', click *Opt out*. Then click the *Opt out* button to the right. To prevent personalized ads that appear on other sites via Google's Web ad services, visit the same page. In the left column, under 'Ads on the Web', click *Opt out* and click the *Opt out* button to the right.

—Nick Mediati

Change a Windows Password Without a Reset Disc

IF YOU NEED to reset your Windows password and you don't have a password-reset disk, try this useful trick.

1. Boot your PC via your Windows installation disc.
2. Wait for the setup files to load, and select your language. Click *Next*.
3. Click the *Repair your computer* link on the Install Windows screen.
4. Select the OS to repair, and note the drive letter it is installed on. Click *Next*.
5. Click *Command Prompt* in the list of recovery tools.

In the next two steps, the instructions refer to drive letter C:, but if your OS is on

another drive, use its drive letter instead.

6. At the Command Prompt, type **copy c:\windows\system32\sethc.exe c:** and press **<Enter>**.

7. Type **copy /y c:\windows\system32\cmd.exe c:\windows\system32\sethc.exe** and press **<Enter>**.

8. Exit the Command Prompt and reboot the PC. At the login screen, tap *Shift* five times. This will cause the Windows Command Prompt to pop up (instead of activating Sticky Keys, as is normally the case).

9. Type **net user username**

password, replacing *username* with your username and *password* with your choice of a new password.

10. Exit the Command Prompt, and then use your new password to log back in. To keep other users from exploiting the same trick to reset your password, restore Sticky Keys as follows:

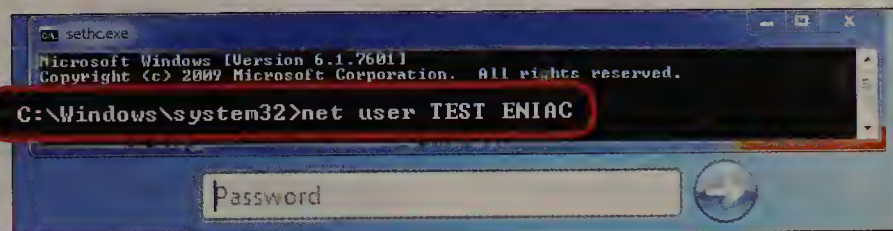
11. Step through the in-

structions above to boot the PC using your Windows installation disc, open the recovery tools, and launch the Command Prompt.

12. Type **copy /y c:\sethc.exe c:\windows\system32\sethc.exe** and press **<Enter>**.

13. Exit the Command Prompt and reboot your computer. You are done!

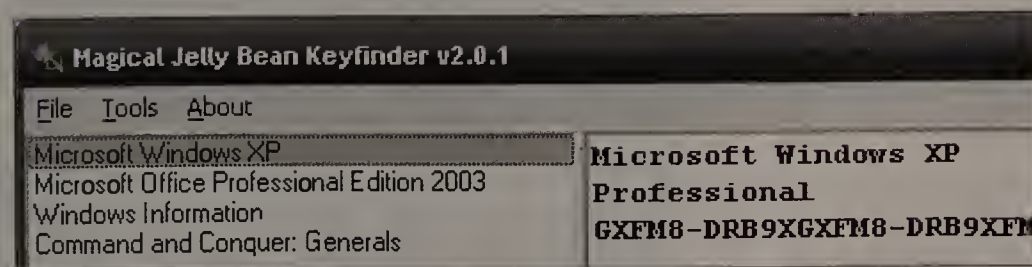
—Justin Phelps



IN STEP 9 you'll reset your password at the Windows Command Prompt.

EASY HACK: INSTALL WINDOWS 7 WITHOUT A DISC

MANY PCs SHIP without Windows 7 installation discs. Instead, they have “recovery” discs and/or partitions that claim to restore your system to its “factory fresh” state, but include lots of bloatware along with Windows. Removing all of that junk is time-consuming—and not the same as starting fresh.



THE MAGICAL JELLY Bean Keyfinder app helps you collect your serial numbers.

Here's how to make your own Windows 7 installation disc (or USB flash drive) and use the valid product key that you already have to perform a fresh reinstallation.

Though many people have had success with the method outlined here, others haven't been able to activate their copy of Windows, even after entering a valid product key, and still others own PCs that require software not included in a Windows 7 ISO. Consequently we recommend against deleting your recovery partition or throwing away your existing recovery discs.

Before you do anything else, save all of your files and drivers to external media. Plan on loading the latest device drivers from media that you create before reinstalling Windows.

Find and identify your system's Windows 7 product key. This 25-character alphanumeric string is usually printed on a sticker

affixed to your PC or on accompanying documentation. Or you can use a keyfinder program such as Magical Jelly Bean Keyfinder (find.pcworld.com/62357) to pull your product key from the Registry. The product key is crucial because you need it to reinstall Windows.

Next, download the ISO file for your version of Windows 7. The download exceeds 3GB, and your product key will work only with your edi-

tion of Windows, so take care to select the right one.

Download the Windows 7 USB/DVD download tool for copying your Windows 7 ISO file to a DVD or to a USB flash drive. Whether you choose DVD or USB makes no difference; just confirm that your PC can boot to the media type you select.

At this point you're ready to boot your PC via the DVD or the flash drive. Simply follow the prompts that it provides for preparing the destination hard drive and installing Windows.

—Justin Phelps

Back Up Multimedia Phone Files

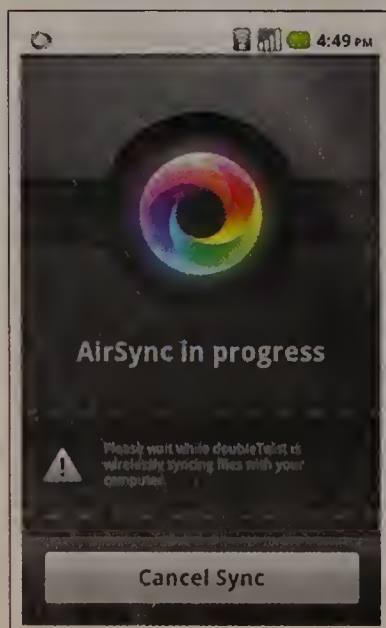
YOU CAN BACK up pictures, music, and videos manually from your Android phone to a PC (for details, see find.pcworld.com/72742), but some third-party software lets you automate the process.

AirSync from DoubleTwist (find.pcworld.com/71987) will synchronize data between your computer (Mac or Windows) and your smartphone, much as iTunes works for iOS users. AirSync can also sync wirelessly over your network.

Another option is Missing Sync for Android (\$40, find.pcworld.com/72741)—an easy-to-use, all-in-one sync and backup program that again offers wireless syncing.

Or try a free service like Google Music (find.pcworld.com/72222) or Picasa (find.pcworld.com/70239); either one will back up your music, photos, and video files online.

—Michael King



HASSLE-FREE PC

Restore Missing Icons Wiped Out by a Virus

Did an infection seemingly wipe out all your icons, programs, and data? Fear not: They might just be hidden. Here's how to restore them.



RICK BROIDA

A MONTH OR so ago, my sister-in-law called me, just about in tears. "Something" had happened to her laptop—probably a virus, she guessed—but everything seemed to be gone: all her desktop and Start Menu icons, and, even scarier, all her data. It was as though aliens had abducted her desktop.

Not aliens: hackers. Her system had indeed been infected by a virus, and I had to conduct several sweeps with Malwarebytes Anti-Malware (still the best recovery tool out there, IMHO) to get rid of it. (For an excellent malware-removal tutorial put together by *PCWorld's* Eric Geier, visit find.pcworld.com/72743.)

There was just one remaining problem: Removing the virus hadn't restored all of my sister-in-law's icons and data. Diagnostic tools still showed the hard drive to be nearly full, meaning nothing had actually been erased, but for all intents and purposes, the stuff was still MIA.

Bring It All Back

Fortunately, I found a utility that worked a seemingly major miracle: It brought everything back.

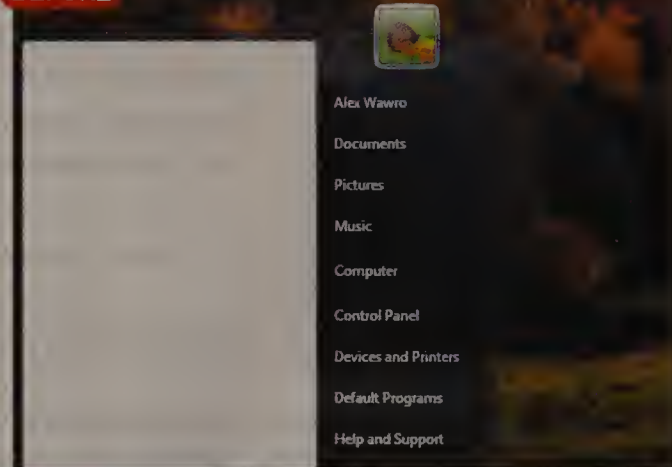
It's called UnHide. This free, self-contained utility is available via BleepingComputer as an executable download file (at find.pcworld.com/72744), courtesy of a user named Grinler. Just download and run the program, then be prepared to wait. On my in-law's system, restoring everything took 10 to 15 minutes.

But restore everything it did: desktop icons, the Start Menu, and all the seemingly vanished data.

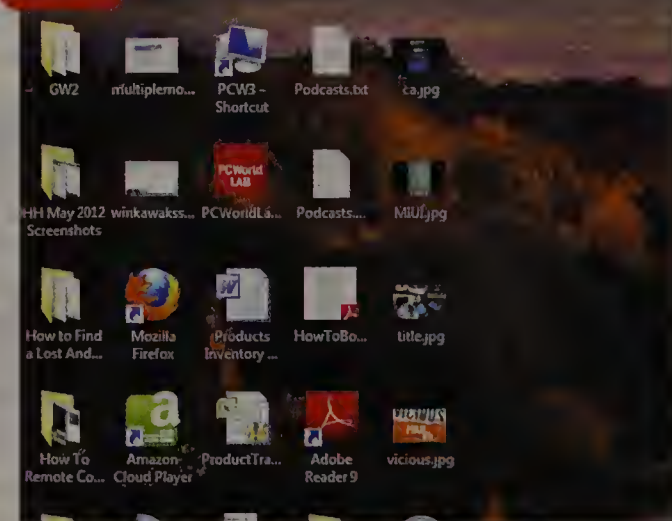
This experience was a first for me; I had never encountered a virus that made almost the entire desktop vanish as if obliterated. Scary stuff!

If you find yourself in a similar situation, don't panic. I think it's the rare virus that actually does wipe out data. That said, this is probably a good time to remind you to make regular backups—not just to an external drive, but also to the cloud. Better safe than sorry! ●

BEFORE

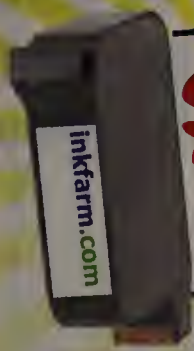


AFTER



IF ICONS ON your Windows desktop and Start Menu have gone missing due to content-masking malware, an effective utility called UnHide can help restore them.

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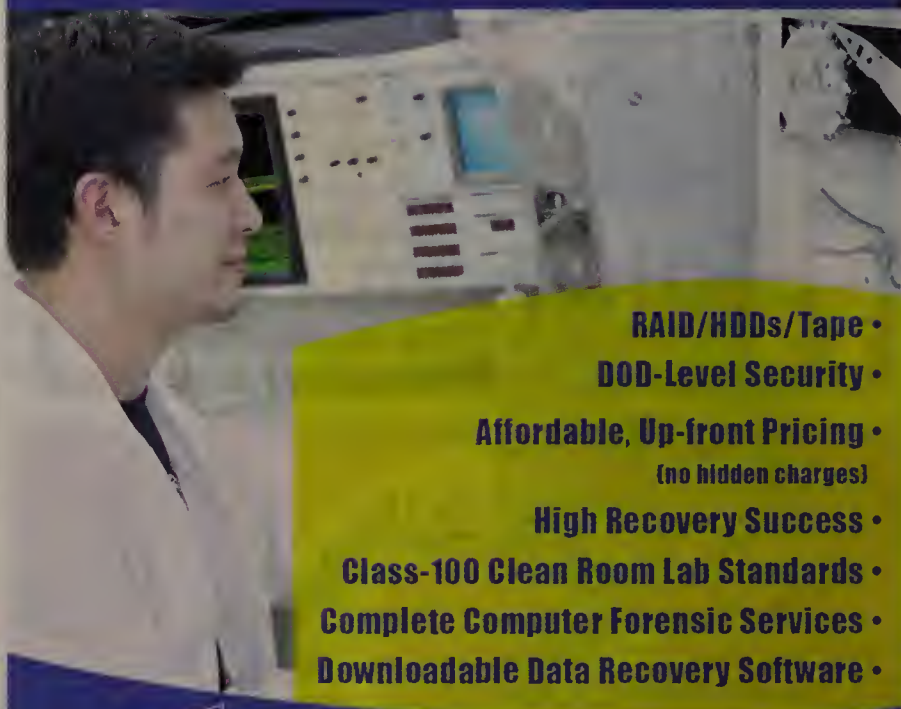
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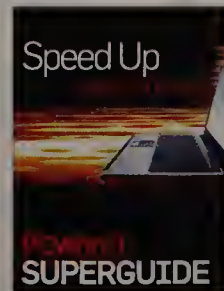
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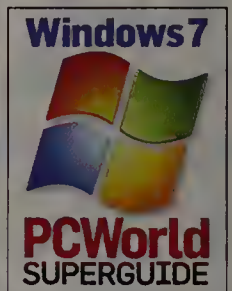
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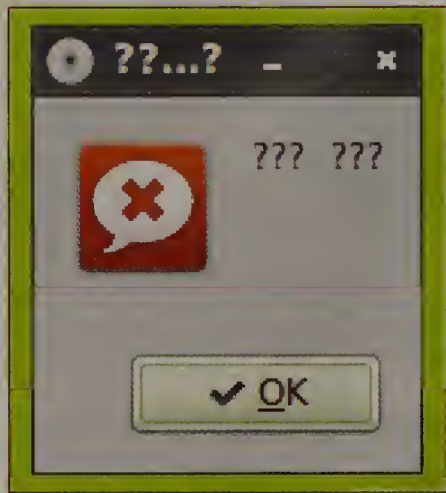
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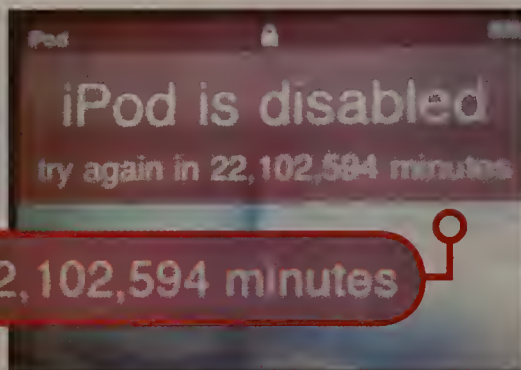


We Have a Few Questions

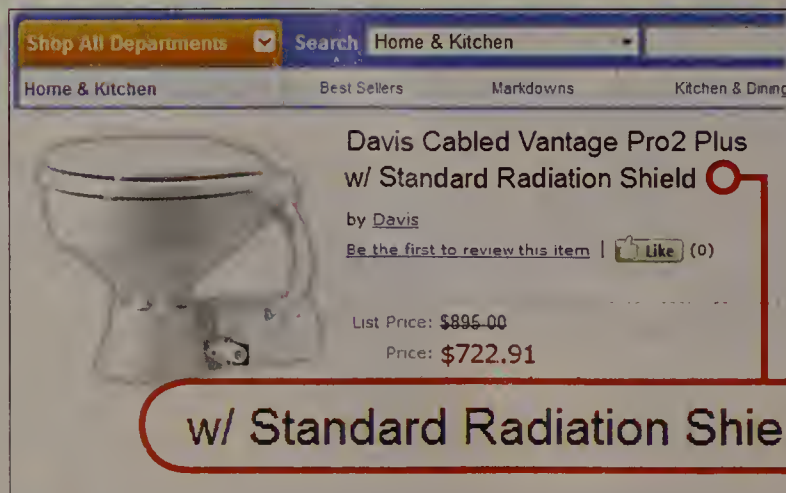
READER BILL GRAVELSTON was attempting to install Linux Mint LXDE, a lightweight Linux distribution, but his computer didn't want to cooperate. First, the process instructed him to unmount all mounted disk drives, after which it treated him to the mystifying dialog box at left. We presume that he clicked *OK*.

Note to Self: Check Back Again in 2054

ANDREA BENDER OF Edina, Minnesota, reports that her daughter Ellie was recently locked out of her iPod Touch for typing in the wrong password. The penalty: about 42 years. "I understand a cooling-off period," she says, "but this seems a bit severe."



Weather-Predicting Toilet



ELECTRICAL ENGINEER DAVID Bell from Richmond, Kentucky, is pleased with the weather station he ordered for his facility's plant. Based on the Amazon.com product shot, however, the "standard radiation shield" is little more than a toilet seat cover.

Have an idea for The Back Page? Send your suggestions to TheBackPage@pcworld.com.



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→ IBM says future computers will be constant learners. Great! Then it'll be easy to tell them apart from humans.

→ Pundits predict that few tech issues will move forward in Congress for the rest of 2012, effectively putting tech issues on the same footing as everything else.

→ Google augmented-reality glasses expected by year's end. We want the rose-tinted kind that budget analysts use.

→ Brooklyn man sues Apple over Siri's inability to understand his speech. Siri to plaintiff: "Fuhgeddaboutit."

→ Samsung's overpriced tablets are not selling well. That's weird, since Apple's overpriced tablets are selling like hotcakes. ●

—Steve Fox and Steven Gray

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